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Practically all of our Big Family of readers have been gathered together by means of letters and circulars sent direct from the publication office. We have always preferred to deal direct with our friends, the subscribers, rather than thru any agents or middle men.

Occasionally we have asked our subscribers to call the attention of their friends to the magazine. A great many have done this and have helped their friends by sending in their subscriptions for them. We are very grateful for this loyal co-operation from our subscribers and hope that it will continue. This represents friendly service

on the part of some one you are well acquainted with and know to be dependable.

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We understand that certain miscreants have been causing trouble traveling around the country taking orders for building publications and keeping the money.

One scalawag had filched twenty-five subscriptions for builders in a Michigan town before we learned of it. Of course he had failed to turn in the names and addresses, and was keeping the money. We had the law after him in short order, and he has promised not to do it again.

We hope none of our subscribers, either present or prospective, will get taken in by any of these crooks. The well known AMERICAN BUILDER policy of employing no subscription agents should be a protection to Our Folks.

Sincerely,

Editor AMERICAN BUILDER.

NOW THE "AMERICAN BUILDER"

IN response to numerous suggestions, earnest requests and entreaties, the name of this publication was shortened, beginning with the issue of February 1917, to the AMERICAN BUILDER.

This simplified form of the well known but cumbersome title of "American Carpenter and Builder" is a welcomed change, we are assured, to our many friends and well-wishers. It was with a good deal of hesitation that we made even this slight change in the publication name. In fact, for more than five years it had been under consideration. The old name which we have worked for and built up thru twelve years of enthusiasm and devotion to stand for the biggest, best, and most extensively read of building journals, naturally had a real value and a sentimental worth not to be lightly laid aside.

However, these are busy days for all—it is the time to cut out lost motion and wasted effort. We must simplify. Therefore, from now on the "American Carpenter and Builder" will be known simply as the AMERICAN BUILDER.

It is a broader title and more truly descriptive of the broad field this publication covers. There will be no change of editorial or business policy or of ownership under the new name.

WM. A. RADFORD,
President and Editor-in-Chief.

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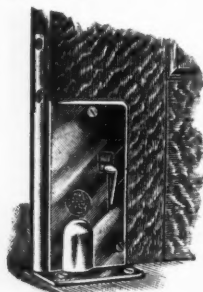
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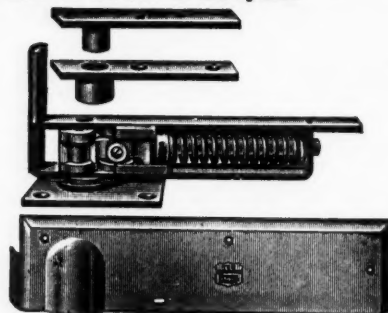
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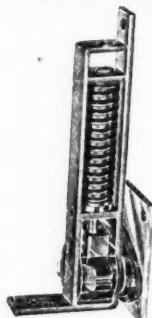


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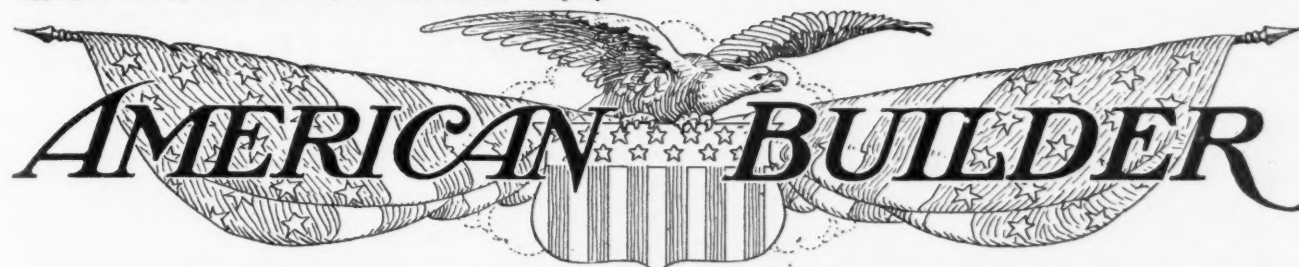
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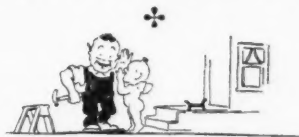
Advertising Staff

VOL. XXII

March, 1917

No. 6

PUT a handicap on the other fellow by knowing a little more about the business than he does.



Porches and Matrimony

S AID a building material merchant to the road man on his recent visit:

"You know I always keep my mind on the trigger for ideas that will help me in my business. I got a good one the other night at the Men's Club of our congregation.

"The minister was talking about the tendency of so many young men to stay single and the general opinion was that this lull in the hyphenation of young men and women was attributable to the high cost of living.

"Then he turned a new angle on the topic and one that struck me with particular force. He said that in part the fault was due to the old folks who did not facilitate the meeting of young people. There was one phrase he used that hit me like a hammer. He said: 'A nice front porch has prevented many a girl from becoming an old maid.'

"From the time I heard that, my mind wasn't in the meeting. I was taking stock of all the houses in

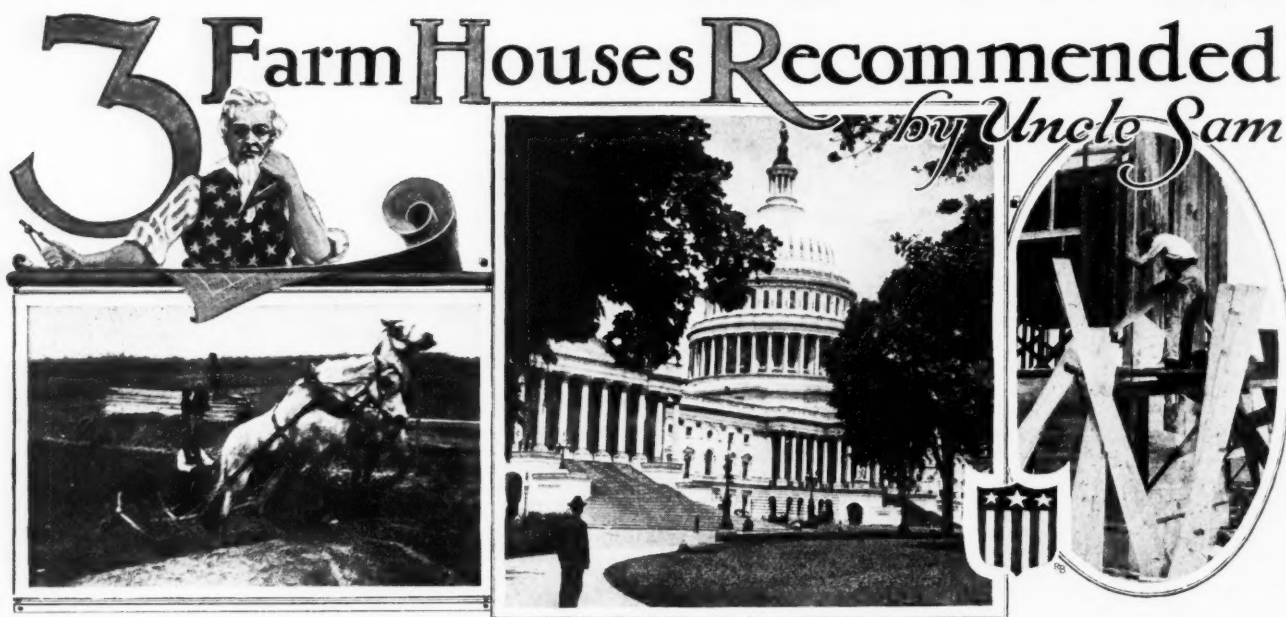
town without front porches, but with daughters growing up or growing into spinsterhood.

"I am going to get the carpenters and contractors after these people, and also get after them myself, to see that they put in an order for material to build porches this coming spring."—Knickerbocker Comments.



When U is V

WHY do modern architects assume that U is V, and carve in stone that palpable and bold absvrdity? Now that we possess the U, with soft and gracefvl curve, of vnexcelled docility and willingness to serve, why do they carve VNITED STATES and PVBLIC SCHOOL and svch, and make the English language look as fvunny as the Dvtch, with RESTAV-RANT and PVLLMAN CAR and VNIVERSITY and other marks of edvcational perversity? That V impresses some of vs as cheap and gavdy blvff, which parvenves may pvll in place of more svbstantial stvff, bvt people who are fashioned ovt of dvst view all svch affectation with an vnassvmed disgvst. Svch exhibitions always make vs glvm and blve. Now, honest Injvn, don't they have the same effect on you? —Printer's Ink.

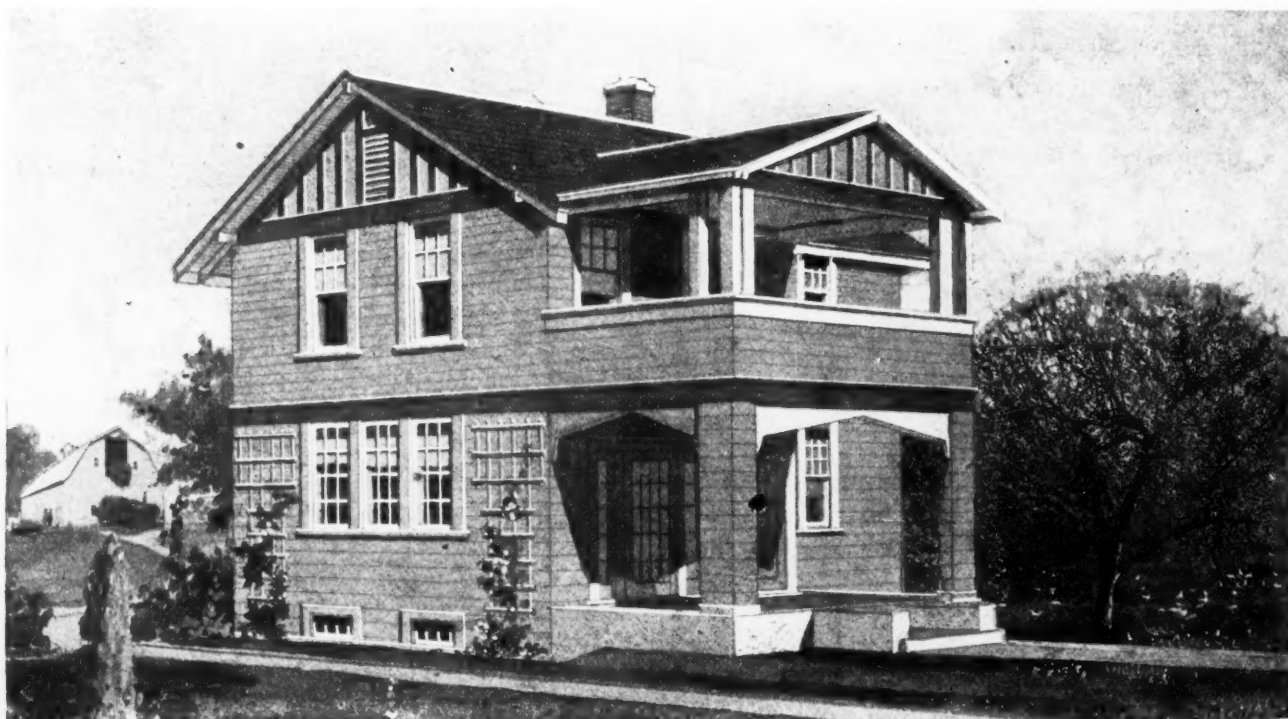


YES, our Uncle Sam is also an architect. Fact is, he assumes any role that the needs of his nephews and nieces require. A very versatile Uncle Sam! But what we started to say is this: Having found that the design of farm houses had not been given as thoro an investigation as the importance of the subject warranted, the United States Department of Agriculture, thru the Division of Rural Engineering, Office of Public Roads and Rural Engineering, set about to produce farm house designs which would represent the most approved practice in this type of structure. The three farm houses shown in the accompanying illustrations are taken from designs produced in this way, so that readers of AMERICAN

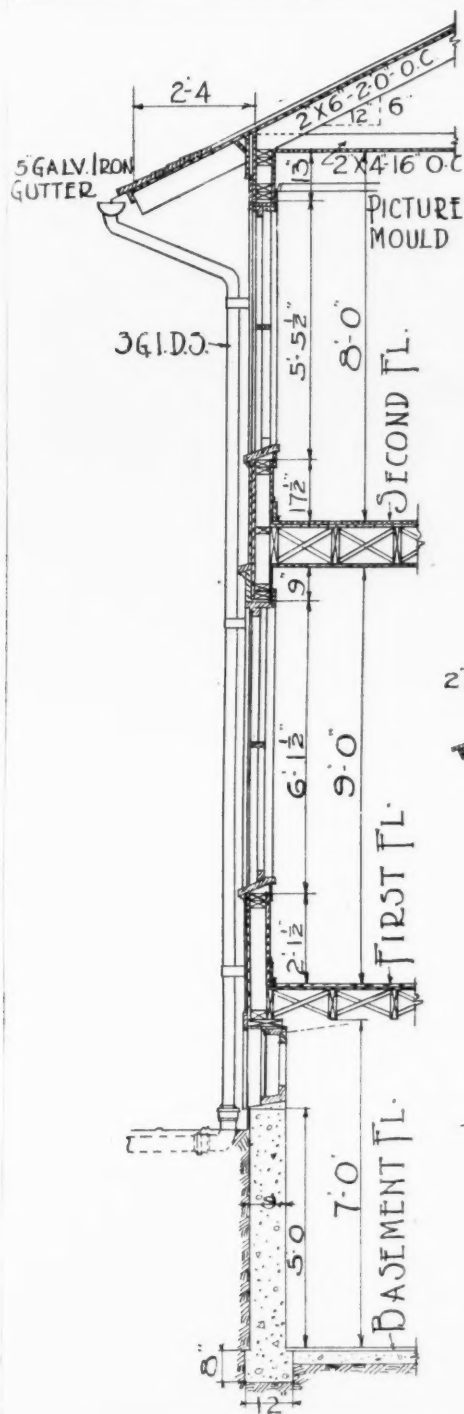
BUILDER may be acquainted with some of the principal features.

The farm house shown below is a two-story structure having six rooms, a bath and sleeping porch. The exterior is finished in an attractive manner. Siding is exposed $8\frac{1}{2}$ inches to the weather below the 1 by 10-inch girdle and $5\frac{1}{2}$ inches above it; 12-inch boards and $4\frac{1}{2}$ -inch battens, placed vertically, are used under the gables.

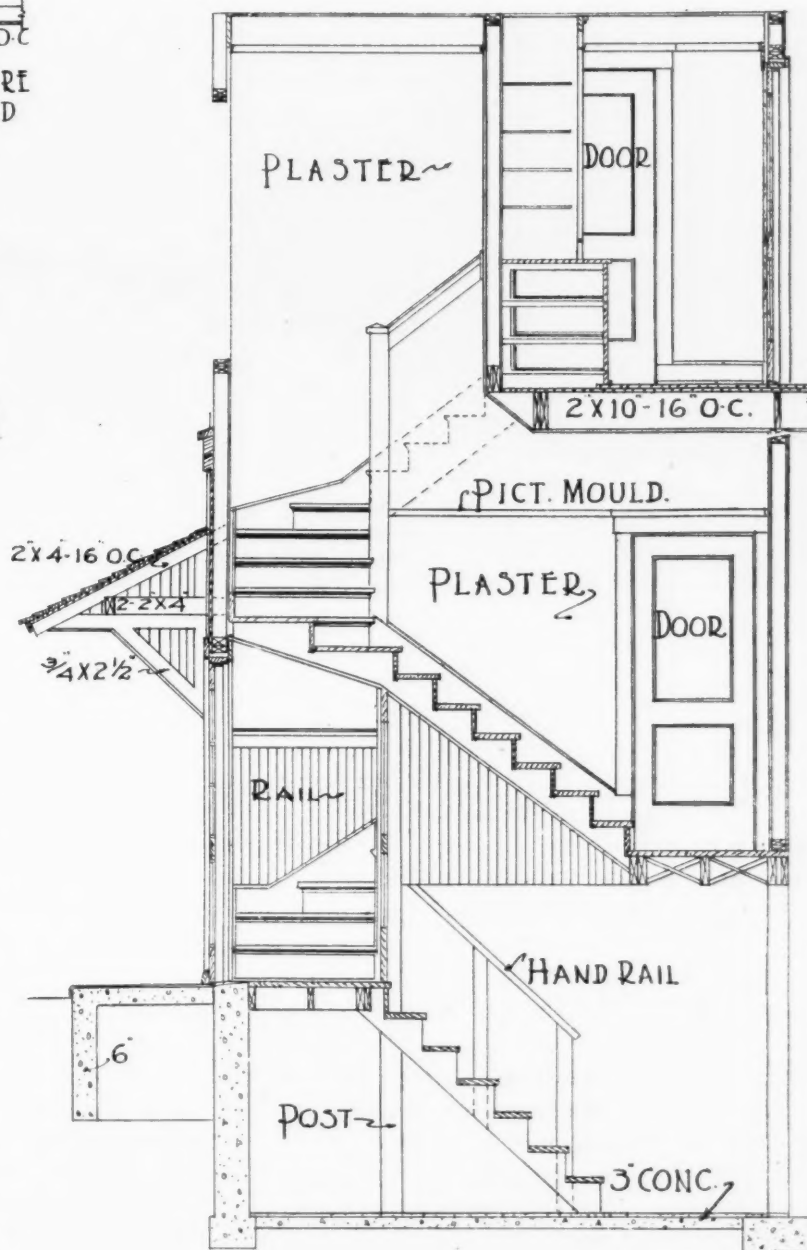
The construction of the chimney is novel. It is built of brick capped with a reinforced concrete slab thru which the two flues pass. On flue is built into a portion of the chimney from the basement to the roof, to be used for the furnace. A second flue of



Two-Story Frame Farm House Designed by United States Department of Agriculture. It Has the Quality of Neat Appearance Combined With Conveniences. The Floor Plan and Details on Opposite Page Show Several Unique Farm House Conveniences.



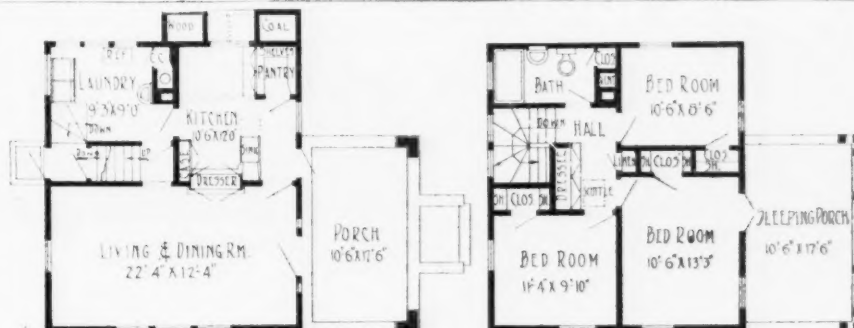
SECTION THRU WALL.



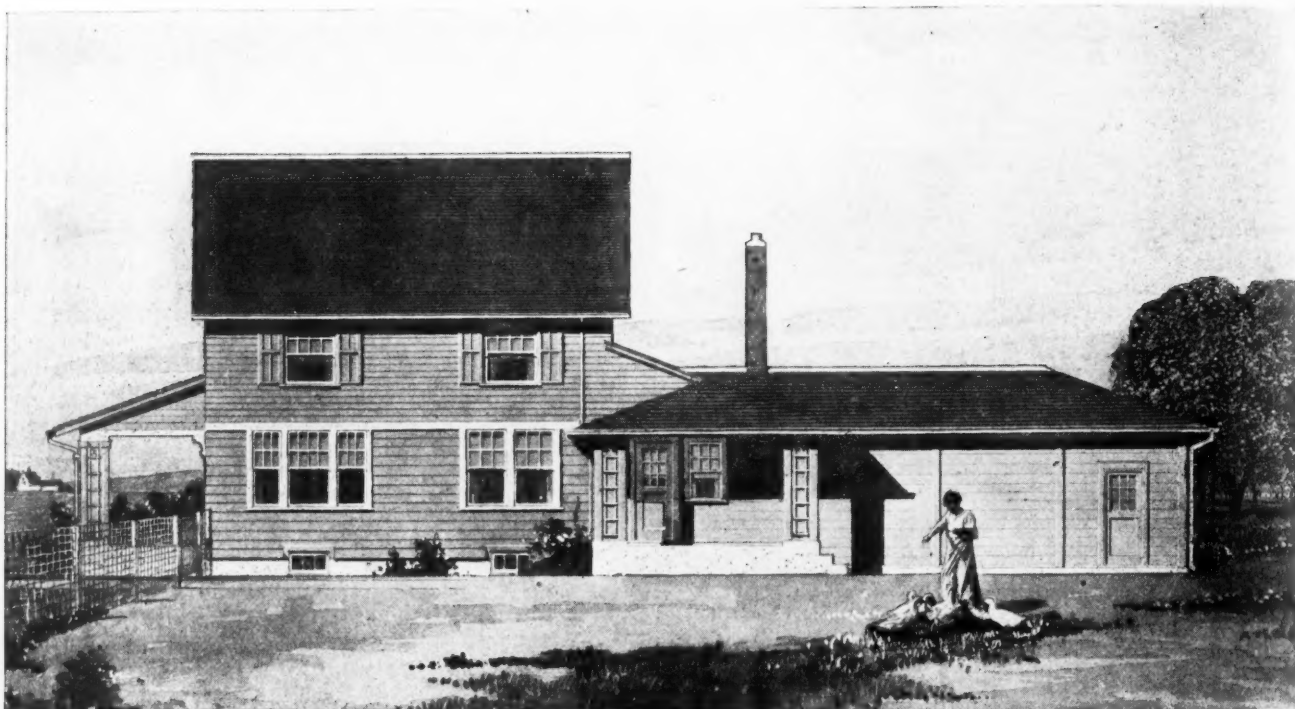
SECTION THRU STAIRWAY.

Structural Details of Farm Home Shown on Opposite Page.

8-inch sewer tile is set on two angle irons anchored in the chimney about 7 feet above the first floor joists. This flue serves the kitchen range. The space in the chimney around the tile flue is utilized to ventilate the kitchen. A 16 by 12-inch register is placed in the chimney wall at the ceiling line above



First Floor Plan. Second Floor Plan.
First and Second Floor Plans of Farm Home Shown in Perspective on Opposite Page.
Size 23 Feet 4 Inches by 25 Feet 9 Inches.



A Farm House With Ice House and Dairy at the Rear. This is Another of Uncle Same's Farm House Designs Having Special Features of Convenience. It Should Be Noted That the Needs of the Farmer's wife are Carefully Considered in Each of These Designs.

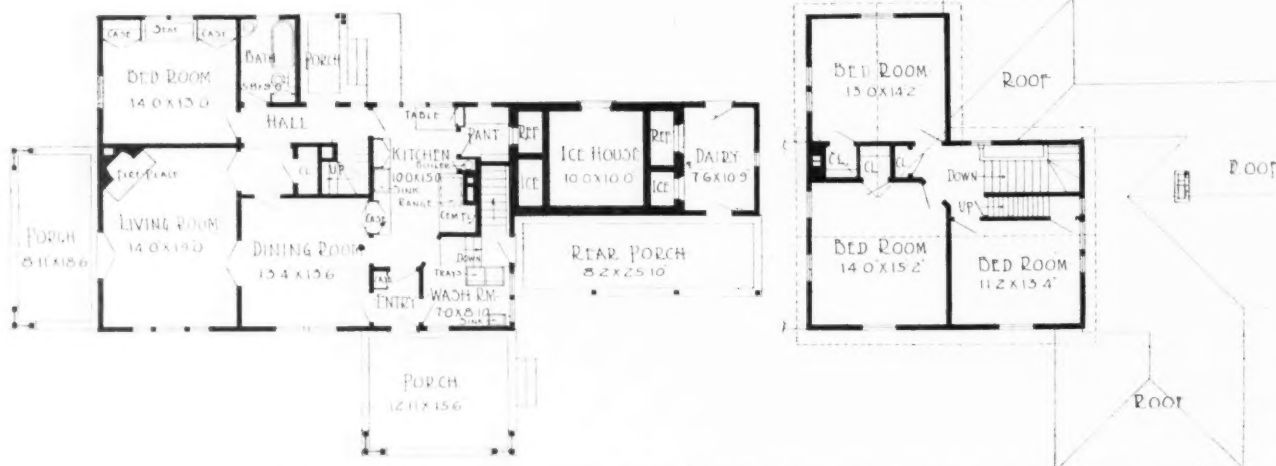
the kitchen range. Heated air is drawn thru this register, up the chimney and discharged at the top, where 16 by 12-inch cast-iron grilles are placed on two sides just under the concrete cap. The kitchen range sits on a reinforced concrete cantilever slab hearth anchored in the chimney. The part extending across the chimney forms a top on the ash pit below and also supports the water boiler which is set within the chimney. A 6-inch galvanized iron pipe forms an ash chute from the concrete hearth to the ash pit below. A plastered hood is formed in the ceiling above the range.

THE farm house shown on this page is of quite a different type. The house proper contains seven rooms, a bath and wash room. At the rear, the lower portion of the house is continued out to form an ice house and dairy. The hip roof, which covers this portion of the structure, is extended over one side to

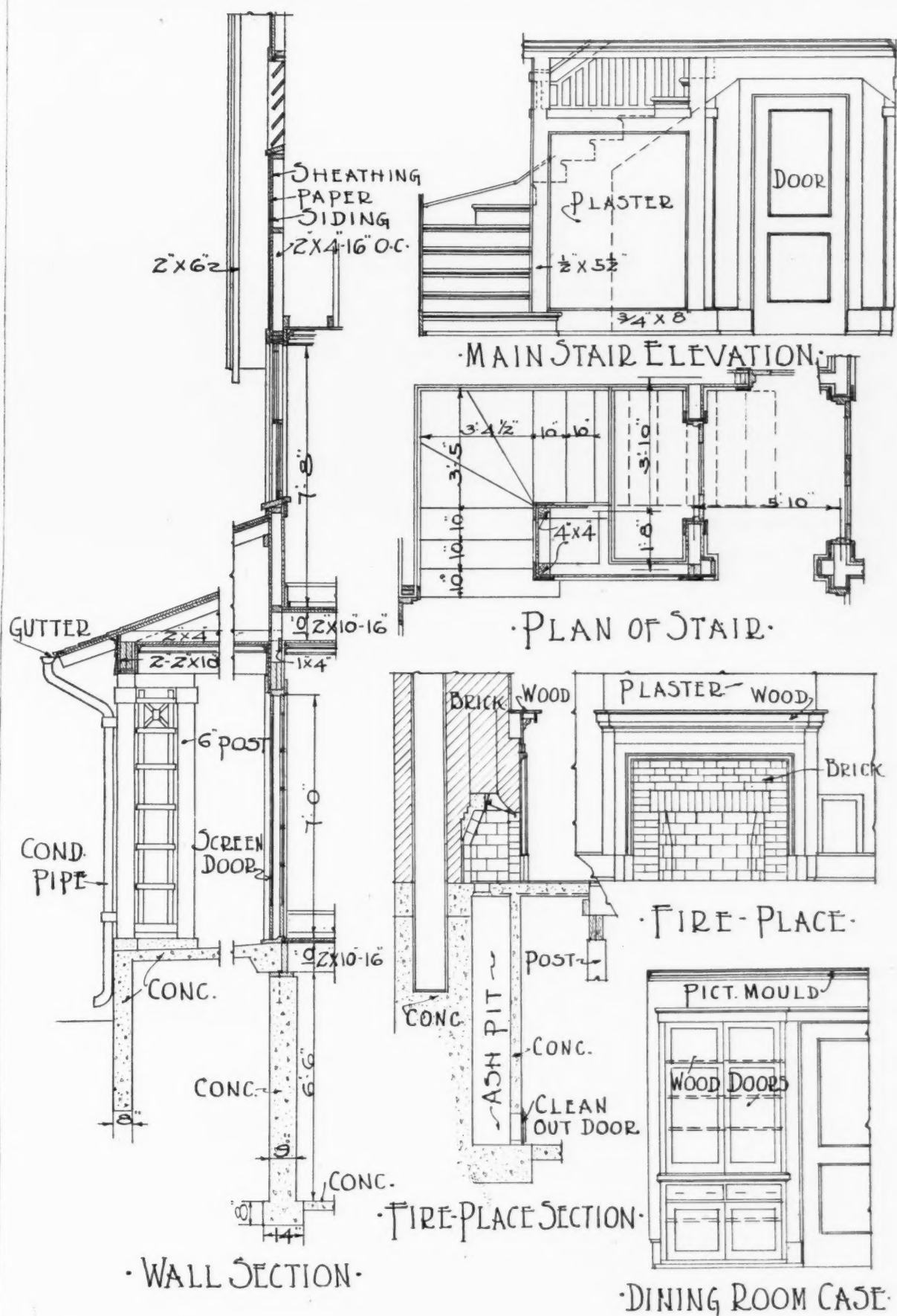
form a broad porch. The exterior of the entire building is covered with siding exposed 8 inches to the weather.

Foundation walls of concrete are used thruout and porch floors are also of this material. A basement is excavated under the main portion of the house only. Two chimneys are used, one at the front, which serves the furnace and fireplace and a second which serves the kitchen range. As in the farm house previously described, this chimney supports a reinforced concrete hearth upon which the kitchen range is set. An ash chute is also provided and the plastered hood is built above the range.

An interesting feature included on each of these three designs is a cabinet built into the wall between the kitchen and the dining room. The upper part is a case having adjustable shelves and wood panel doors opening in both the kitchen and dining room.



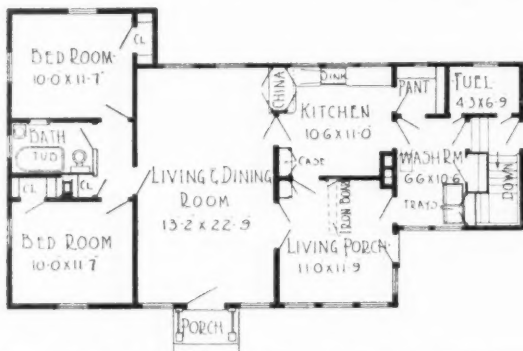
First and Second Floor Plans of Farm House Shown in Above View. Size 69 by 33 Feet.



Structural Details of Farm House Shown on Opposite Page. Good Substantial Construction is Called for Thruout.



A Compact and Well Arranged Farm House of Six Rooms, Following Another of the United States Department of Agriculture Designs.



Floor Plans of Above Farm House. Size 50 by 29 Feet.

Below this, on the dining room side, there are drawers and another small case with doors. In the kitchen, the bottom part of the dresser is extended so that a table-height shelf may be placed between the upper case and the lower drawers and case. The arrangement is very handy on either side.

THE third farm house design is a six-room, one-story structure. Siding strips are exposed 7½ in. to the weather, dormer sides are finished with shingles and the hip roof is covered with prepared roofing. Foundation walls are of concrete and the two chimneys are built of brick, capped with concrete slabs and provided with flue linings. The ground is unexcavated under the two bedrooms and the bathroom. There are four 18 by 10-inch cast-iron grilles placed in the walls of the house above the concrete foundation walls in the unexcavated part of the basement. A concrete floor is placed in the excavated basement.

There are several interesting features worked into the interior design. The arrangement of bedrooms

with bath between is very desirable. It will be noted that each of the bed rooms has a window in two walls. This is recognized as the best design for such rooms on account of the better ventilation which it provides. A special feature of the living porch is the hinged ironing board in the wall closet. The kitchen is especially convenient. Three double casement windows are placed in the outside wall above the sink and cabinet. Drawers and cases are provided in this cabinet. The dresser, already described, is beyond the sink from the cabinet. The hook over the range and the ash chute are called for, as in the other designs. A fuel room with heavy hinged outside door and two small interior doors is handy to the kitchen and laundry.

A vegetable cellar is provided under the living porch. A vent is carried up the wall between the living room and living porch from the vegetable cellar to the attic. Above the living room the roof is strengthened by the use of two light trusses built of 2 by 4-inch stock and set across the room on a span of 13 feet 8 inches. The floor load below partitions is carried inside foundation walls by 6 by 6-inch wood posts set on concrete piers. All structural details indicate good substantial construction—the kind that costs a trifle more when the building is erected, but more than pays for itself in the better service which it gives.



ALL the advantage is with the man who has the foresight to get there first.

LIFE is a race. The runners must train in brain and body, or drop out.

From Log House to Modern Farm Home

By J. D. Eddy

ON February 12 last, the anniversary of the birth of Abraham Lincoln, the American mind was focused upon the log cabin, the original American type of farm home.

To most of the living, the log cabin, or home, has no real significance, except as a curiosity. They do not realize that this uncouth building attracted little attention less than a hundred years ago because it was a common sight.

Few people nowadays remember such a home. When the average man takes his annual mental survey of the log house, he pictures in his mind only the dark interior lighted by the blaze from the fireplace; before it is a boy—Lincoln—using the firelight as a reading lamp, while gaining the self education which paved the way for a brilliant career which ended so tragically.

So that we may get the proper perspective, let us consider for a moment the log farm home, its limita-

Furniture was of the crudest, home-made type. Tables and chairs were hand wrought, wooden pins being used as nails. The bed was at one side of the room, its mattress made of corn husks, usually, feather beds being only for the "rich." In a home such as this the pioneer farmers of the country lived, while they were clearing the land and gradually making possible the position the United States holds among the agricultural nations of the world.

Demand usually produces a supply and as the population grew in the unsettled regions, the sawmill made its appearance. Hand hewn logs gradually gave way to the more finished product of these mills. Homes began to change in appearance. The log house was superseded by the clapboarded house. The ability to procure boards also brought the home divided into rooms. Then plaster came along and with it smooth walls which were later decorated with wall paper. The stove replaced the fireplace. Coal was substituted for wood as fuel. In fact so many "conveniences" such as the oil burning lamp for the interior and the pump for the well came in rapid succession that life on the farm and in small towns seemed an existence of ease and luxury.

There is that same contrast, however, between the farm home of thirty years ago and the structure that houses the family of today. There is not a conveni-

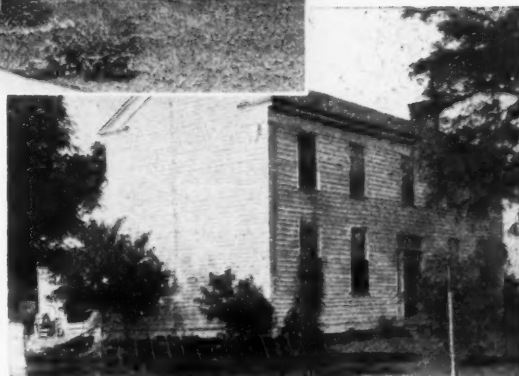


Year 1800.
Log Cabin of the Pioneer.

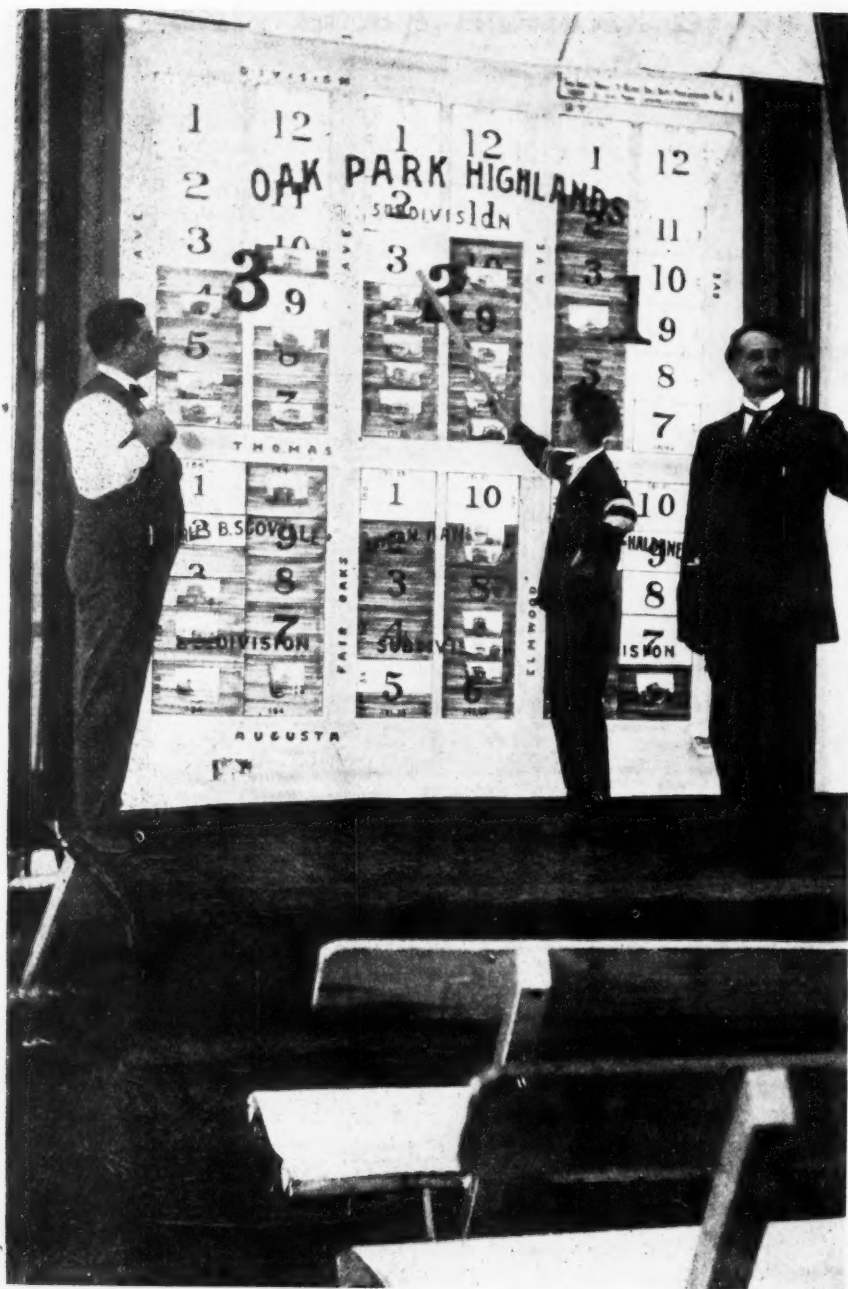


Modern Farm House Designed for Convenience, Well Built and Equipped with Plumbing, Heating, Electric Light, etc.

tions and its inconveniences. It was built of log laid on log, the crevices filled with clay, the interior walls exactly like the exterior. Most of these homes had but a single room, others had a loft, reached by a ladder. At one end was the fireplace, in the opening of which swung the kettle, the principal cooking utensil. Some of the more elaborate fireplaces had an oven built in over the opening.



Year 1870.
Grandfather's Old-Fashioned Farm Home.



A REAL ESTATE AUCTION

House and Lot Auction Stunt Pulled Off by an Oak Park, Ill., Real Estate Builder. Each Improved Lot on This Big Chart Shows a Photograph of the House Erected on it.

ence of modern life that is not now at the command of the farmer, even tho he is isolated from the city. There is but one difference—his are private plants, whereas the city man has to depend on a public service corporation.

There has been invented no one thing which has done more to make rural life more pleasant than the gasoline engine. It has made possible the automobile, both as a pleasure and a business mode of transportation. It has given the farmer a water supply in his home and barns and also in every nook and corner of his farm. It has provided him with electric lights in all the farm buildings; it has also furnished him with power to operate the machinery without which there cannot be modern efficiency in the farm's operation.

Gas engines cost little to operate for the simple reason that there is no waste in the energy they produce. They work only when there is work to do. They pump the water into the tank in the home, which furnishes running water thruout the house. No more does the young son of the farmer have to "go get a pail of water" for mother, neither does mother have to burn up her vitality carrying that same pail to the well when there is no son on the farm.

Carrying the subject of water further, this supply in the home has made possible the hot water and steam heating plants. Both require circulation of water, which is secured from the tank, which is filled by the gas engine. Thus the farmer may have hot and cold running water in his home and cold water in his barns for the horses, in the sheds for his cattle and the pens for his hogs.

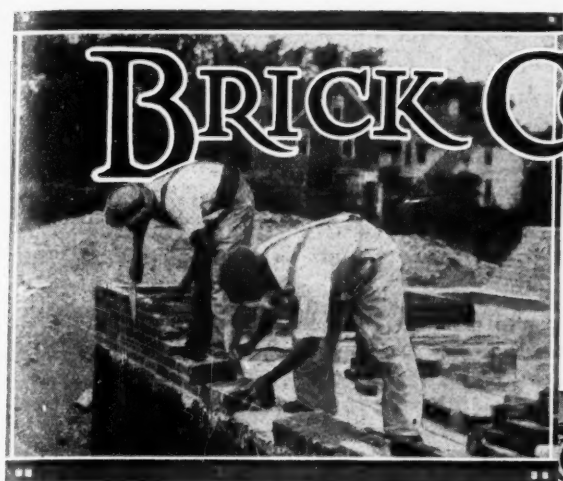
Extensions from his home of the hot water or steam pipes may also be run into a hot house near by, thus providing table luxuries in the winter and early spring.

The gas engine also supplies power for the electric lighting system, thus is another city convenience brought to the farm home. No more are there lamps to clean and wicks to trim. Neither does the farmer have to depend on lanterns for light in his barns. The housewife presses a switch button for light in her home; the farmer does the same as he enters his barns.

A water supply in the house, of course, makes possible a bathroom, with all its conveniences. This room in the strictly modern farm home is an exact duplicate of those found in the most recent city homes and apartments. Of course there is no sewer system on the farm, but science has provided the septic sewage disposal plant, which takes its place.

When the oil stove for cooking was invented, it provided the farmer's wife with a means of cooking in the summer time, which did away with the necessity of a hot stove, which held and disseminated heat long after the meal was prepared. Invention, however, has gone much farther—it has provided in the acetylene gas plant, gas for a kitchen stove, as well as gas for

(Continued to page 102.)



BRICK CONSTRUCTION

*for Modern
Carpenters
and Builders*



Building of Brick at Minimum Cost

A TRUE HOME-BUILDING STORY

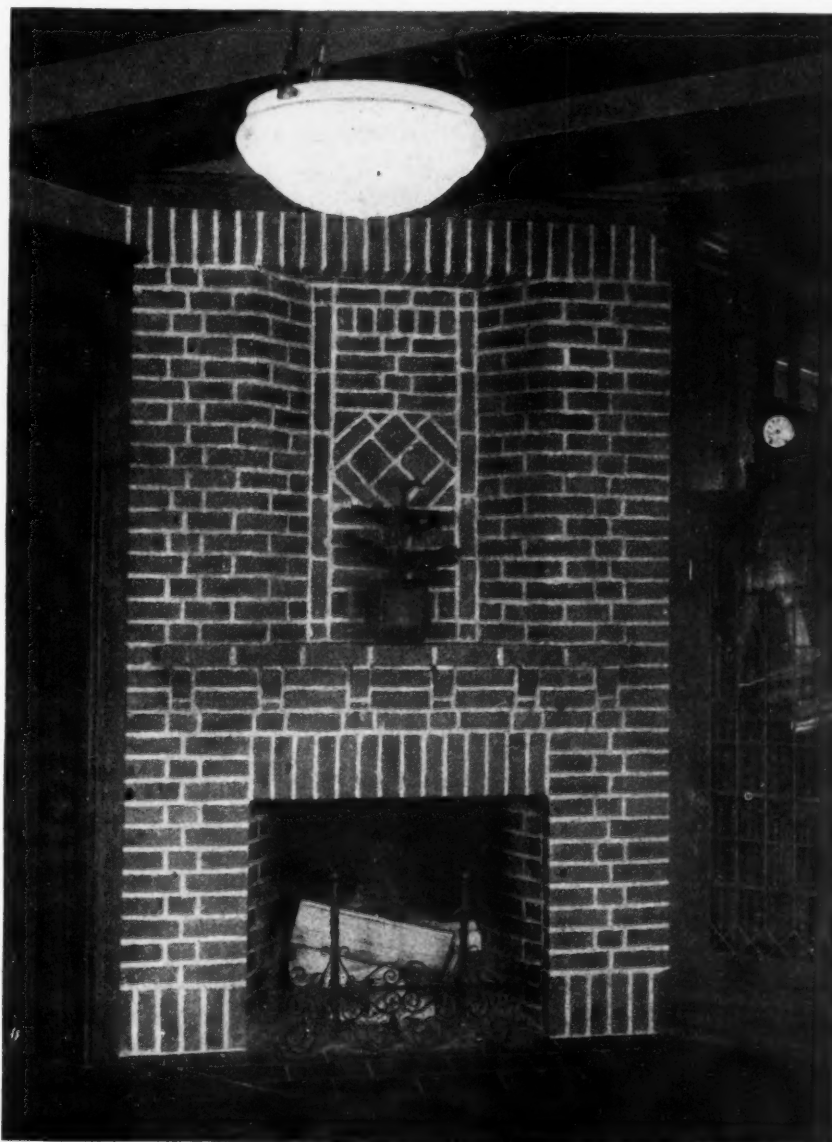
By Carl S. Dow

WOMEN, by refusing to standardize their clothing, have almost unlimited opportunity to express their individuality in dress; but men show their differences by exercising choice in their home-building, no less than by engaging in widely different lines of business. Uniformity in house appearance does not appeal to the man who looks for uniformity in other things—he wants a house that's different, and whenever he can control conditions, he is as unhappy living in a house or apartment that is just like the others on the street as his wife would be if she found other hats just like hers at the club—only he wouldn't talk so much about it; he would decide to move.

The external appearance of a house, due to its shape, is governed largely by the interior arrangement, but the external appearance due to material admits of considerable variety. Many home-builders, aided and abetted by the carpenter-contractor, and even the architect, think the choice of material is settled by the pocket book. In common with many others, I supposed a brick house would be entirely out of the question, for I didn't want to put as much money into a small home as building of brick would seem to require. Even now, when I mention that my house is of brick, my friends usually get off some such remark as: "I guess business has been pretty good lately, hasn't it?" Another way of saying that brick construction is expensive.

Fortunately, I was persistent

enough, or had enough desire for brick, to look into the matter. I figured that brick with a slate roof would be pretty secure against fire from exterior



Brice Fireplace Set in the Corner of Mr. Dow's Living Room. It is Constructed of Red Brown Brick of Rough Texture, Laid in White Mortar, Wide Joints. The Brick is Recessed Above the Mantel Shelf to Give Extra Width.

causes, and reduce cost of upkeep by eliminating all painting except window and door frames and woodwork under the eaves. I also realized that a brick house would last almost indefinitely, and at the end of ten or fifteen years would look quite as well as the day it was finished. Again, in appearance I liked the various colors of the units—red pink, maroon, blue—which are found in the modern rough surfaced

tion to dig into details.

First we laid down our general principles or specifications as to number of rooms, locations, desired exposures, etc., then tried to find or draw a plan that would give the desired combinations. Our search was a long one; it was our time against the cost of architect's sketches. Two or three hundred plans and exteriors were considered only to be discarded

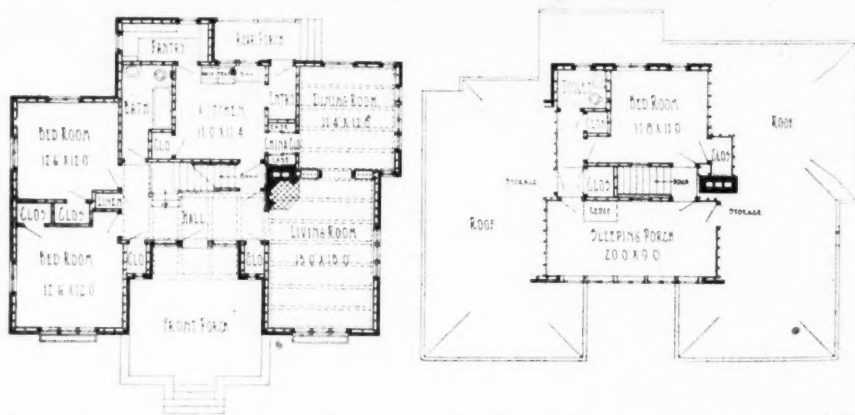


The Natural Beauties of the Wooded Building Site Give Added Attractiveness to the Brick Veneered, Slate-Roofed Dwelling of Mr. Carl S. Dow. Built in a Boston Suburb for a little over \$5,000.00. Chalmers S. Clapp, Architect. Square inset shows details of entrance porch with its interesting heavy timber work above the door.

bricks. I liked the looks of brick much better than I did the unvarying expanses of white, gray, or drab cement or stucco, and I had heard that a stucco house was liable to be cold. The more brick houses I looked at, the more I wanted this material, and the more willing I became to sacrifice some other things if necessary; but I didn't favor a combination of brick and cement. I decided that my house would be all brick or all cement.

I wanted brick if I didn't have to pay too much for it, but I couldn't find out until I planned the house.

After I had my building lot, which allowed the house to face east as I wanted it to face, I began planning in earnest. I thought an architect would be a luxury in the early stages and found that I could conduct the preliminaries alone, altho I couldn't recommend my course to those having little time or inclina-



First and Second Floor Plans of 7-Room Dwelling Illustrated Above. Size 44½ by 28½ ft.

tion for one reason or another. For instance, many a good plan was rejected because of one fault—the dining room was a thoroughfare; that is, the kitchen could be reached from the living room or front of the house only by going thru the dining room.

In an architectural paper I learned that I could purchase the plans offered by architects in one of their prize competitions. As I wanted a bungalow,

I selected their printed collection of plans of bungalows and moderate-priced houses. In this book I found just what I wanted; but it wasn't among the prize winners—another instance of difference in men's opinions. But, scrutinized from every angle, this plan did suit—us.

Next, I measured the rooms of the house I then owned and lived in, and, taking the published plans as a basis, made a drawing to scale, using my desired dimensions, for I knew how large every room should be to suit us. Then I took my pencil plans to the architect who offered the original in the prize contest and arranged with him to make properly dimensioned plans and elevations. He also agreed to look over the specifications, which I decided to write myself, not so much with the idea of saving money, as to become better acquainted with building materials, methods, and the equipment, such as the plumbing, heating and lighting. I also decided to look after the building myself, saving the expense of a supervising architect.

The architect's drawings were practically O. K. the first time he submitted them, for my plans

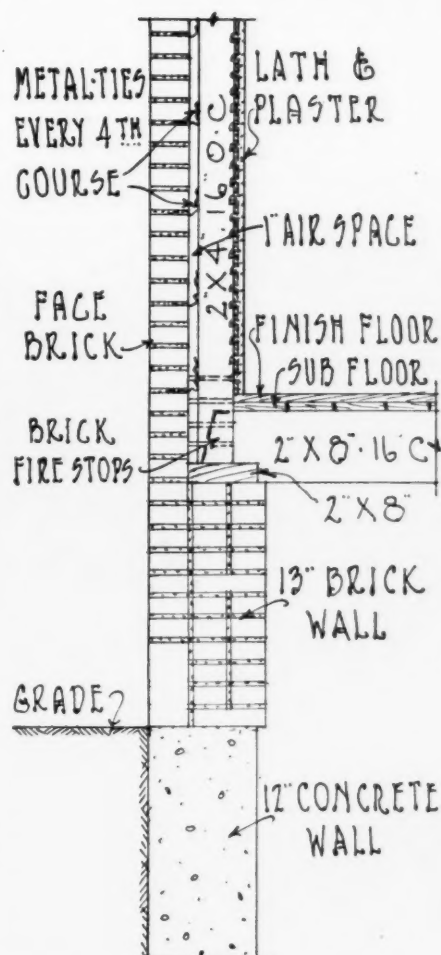
drawn to scale, told him what I wanted, and I knew because I had studied it out. The writing of the specifications took some time, for I had to weigh advantages against relative cost of materials and equipment.

Then for a contractor, to see how much the house would cost. I was acquainted with a city contractor who was glad to estimate the cost as a favor, but he stated frankly that because of his city overhead he couldn't compete with a suburban carpenter-contractor for a small house. He advised me to get a local man. In fact, his estimate for the house, exclusive of plumbing, heating and wiring, was \$8,333, while the local carpenter would furnish the same material and do the work for \$5,890.

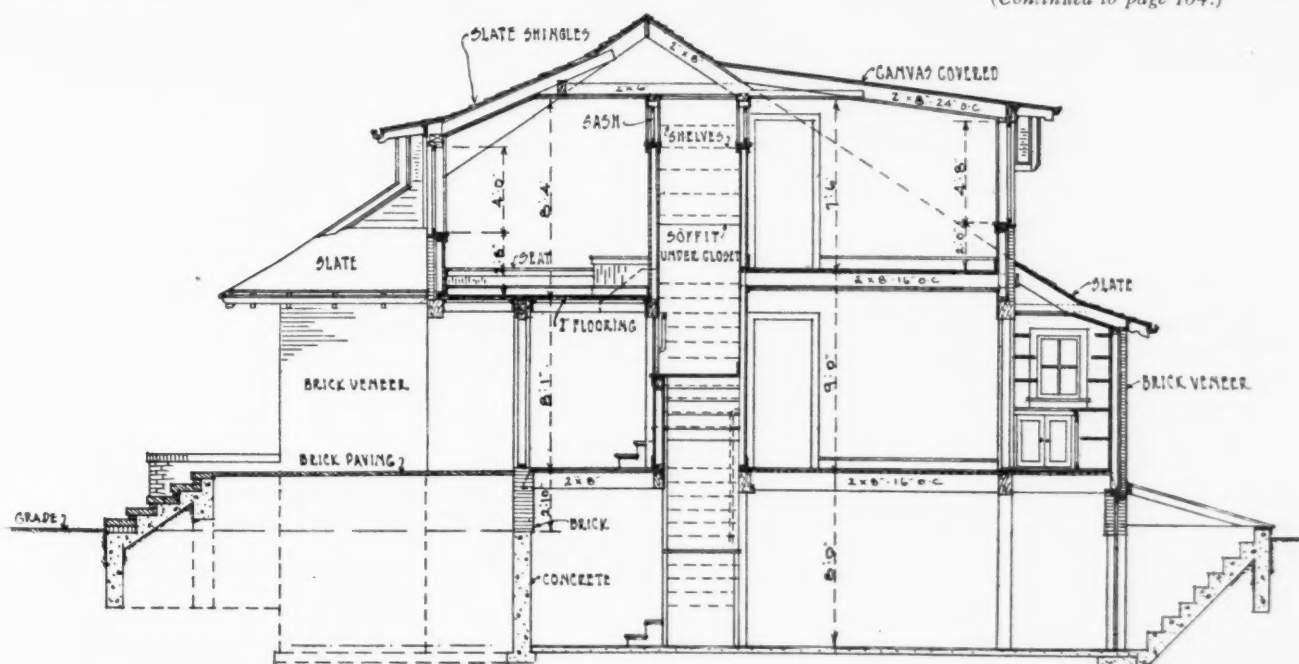
As I was aware that the plumbing, heating and wiring would cost at least \$1,000 more, I then had a good line on what the house was going to cost. But everyone said that I would actually pay at least an additional thousand for changes and additions, commonly called "extras."

I didn't want to pay so much for the house, yet I much desired brick construction. I couldn't let go

(Continued to page 104.)

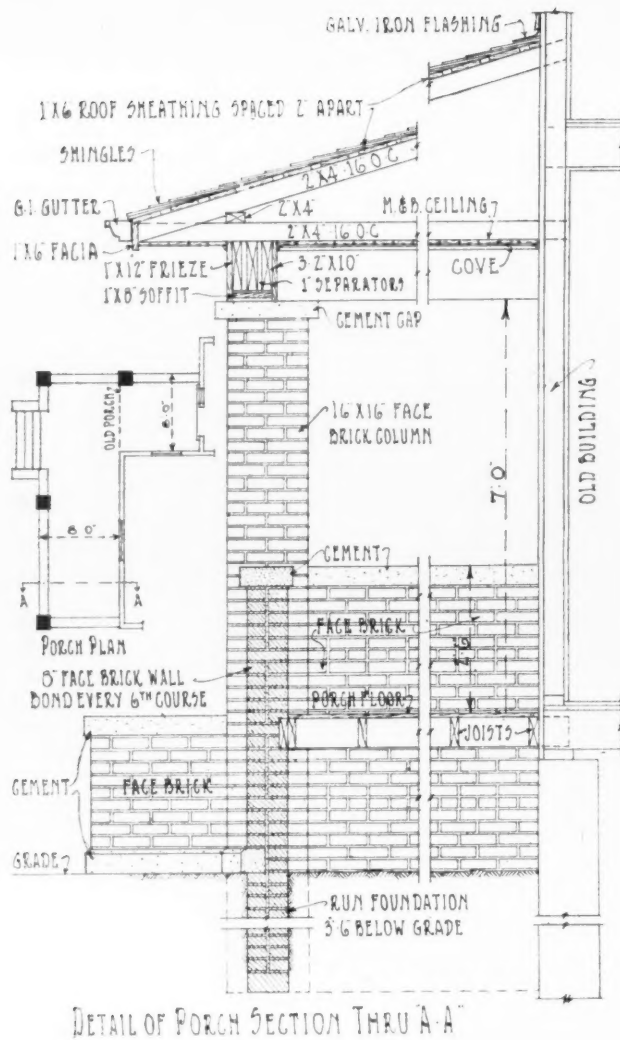


WALL SECTION.



TRANSVERSE SECTION

Sectional View and Brick Veneer Wall-Detail Showing Construction Used in Residence of Mr. Carl S. Dow.



What a New Brick Porch Would Do

THESE views show the "before and after" appearance of the residence of W. D. Padgham, at Sherrill, N. Y., who has requested AMERICAN BUILDER sketch service showing a new brick porch on a sub-



Substantially Built Frame Residence Which W. D. Padgham Thinks Should Be Reporched.

stantially built but old-style house. The addition of such a porch not only adds greatly to the appearance of the house, but it also furnishes a large porch space, the value of which is generally recognized. The increased value of the property is certainly sufficient to warrant the investment.

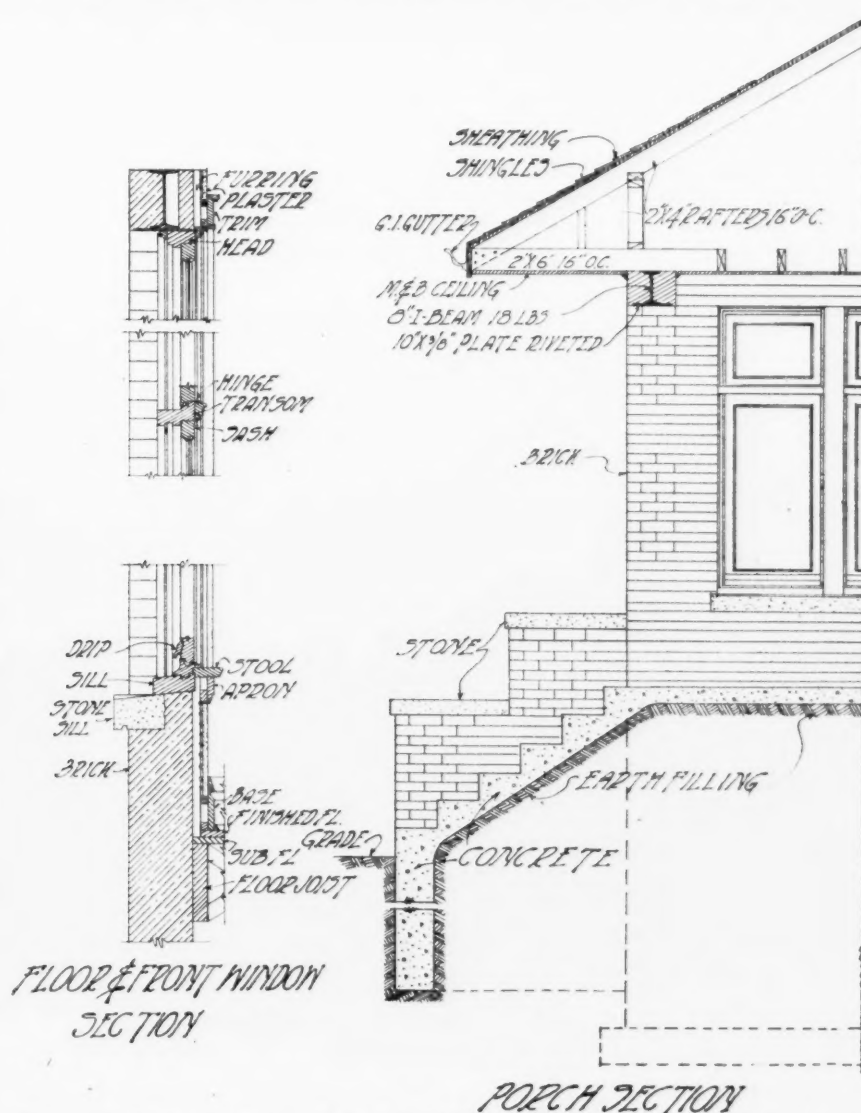
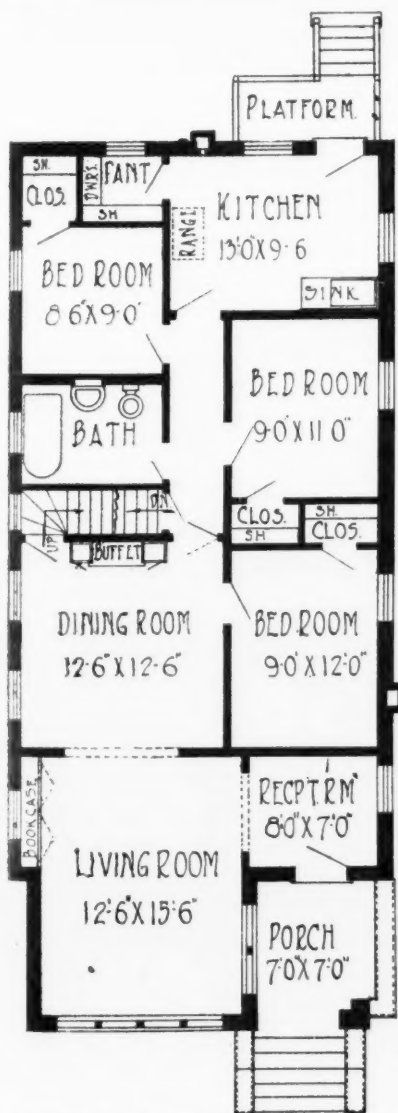
We have made an offer to furnish, free of charge, sketches showing how a brick porch may be added to any old style house of which a photograph is supplied. Many are taking advantage of this unique service.



The American Builder Suggestion as to Modernizing the Padgham House by Building on an Attractive, Substantial Face Brick Porch.



A narrow lot brick house of very pleasing yet economical design. Nothing about this little dwelling to run into money. A 13-inch wall is used as for Chicago city construction; the outside face brick of tan or light buff color; the backing common brick. To those desiring complete information regarding this little house, we will undertake to furnish complete blueprinted working plans and typewritten specifications at a nominal price. Our Design No. is 6910.



Floor Plant of Narrow Lot Brick Cottage. Size 24 by 54 Feet.

Construction Detail Showing Wall Section and Concrete and Brick Front Porch for Narrow Lot Dwelling Illustrated Above.

"I read only the title of many magazines, scan thru some, but devour everything from cover to cover of others"

—THE MAN FROM THE LUMBER YARD

The man of medicine doesn't read the "American Builder." We spare no thought or cost to make the LIVE DOER in the BUILDING FIELD read every page of advertising and editorial matter in it, which is probably the reason such people have no interest in Pharmaceutical Journals, and read such publications as do not pertain to their business with the eye only.

EDITOR.

"OF writing books there is no end," said the wise man. Surely, today, every one should be able to find the book or magazine suited to his particular needs.

When I was a youngster about the only printed matter that came into our house was the New York "Tribune."

My father, who had the principal lumber yard in an area of over 300 square miles, got the major part of his business information from it, while to my mother it gave an insight into changing styles and advice on how to raise the children. Its brief story page provided light reading for all. But in those days the contractors or builders had no source of information for their work. Pilgrim's Progress did not instruct in road building, and the writings of Paul gave data for heavenly mansions only.

This, however, is the day of specialties.

In looking over our January Contractor's number, and February Farm Building issue, with the editor, I inquired if so much information on labor-saving aids to the contractor and in suggestions for the best in buildings had appeared in all the publications of the entire year of 1870.

While he gave it as his opinion that as much real constructive data of interest to builders had not appeared in print during the period of 1870 and 1880

inclusive, yet he took no special credit to the AMERICAN BUILDER, because in those days the material was not at hand.

Playing Marbles

It was always a question in my mind as to whether boys played marbles when Spring came, or whether Spring came when boys played marbles.

There perhaps has never been a set of farm buildings laid out in as ideal a way as was shown in our February issue, but there will be a number before next February.

The Ideal Must Precede the Real

My contention is that the class magazine is the fountain head.

The education it gives and the standard it sets is the reason for the demand for better things.

Birds of a feather naturally flock together. That is why the man who is interested in the latest ideas in furniture machinery consults the Wood Worker, and you would not look through the National Druggist for concrete mixers; nor would your wife look in the AMERICAN BUILDER for information relative to corsets.

It is quite natural for you to go to the movie for amusement, and to church for religion. You read the evening paper for news of the world and would probably not see the picture of a motor truck unless it were one suited especially to your work.

Value of Time

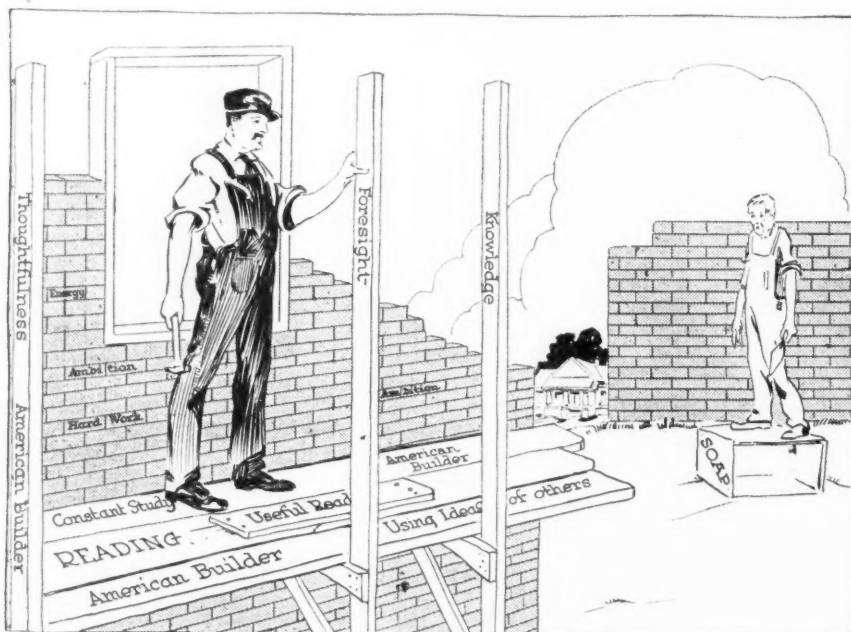
I have had many invitations to "have a drink," but I couldn't afford to take a drink, even if the other fellow paid for it.

Owing to my connections I could have fifty magazines every month at very little cost, but I can't afford to read them.

I read only the title of many magazines, scan thru some, but devour everything from cover to cover of others.

You, your associates and your employees *must* read. What you read is of as vital interest to you as what you eat. Do you think it is of no concern to you as to what an employee eats.

(Continued to page 110)



Our Artist Clearly Points Out the Reason Some Men Outstrip Others Who Depend on Their Own Ability Alone.



A Portfolio of Beautiful Homes

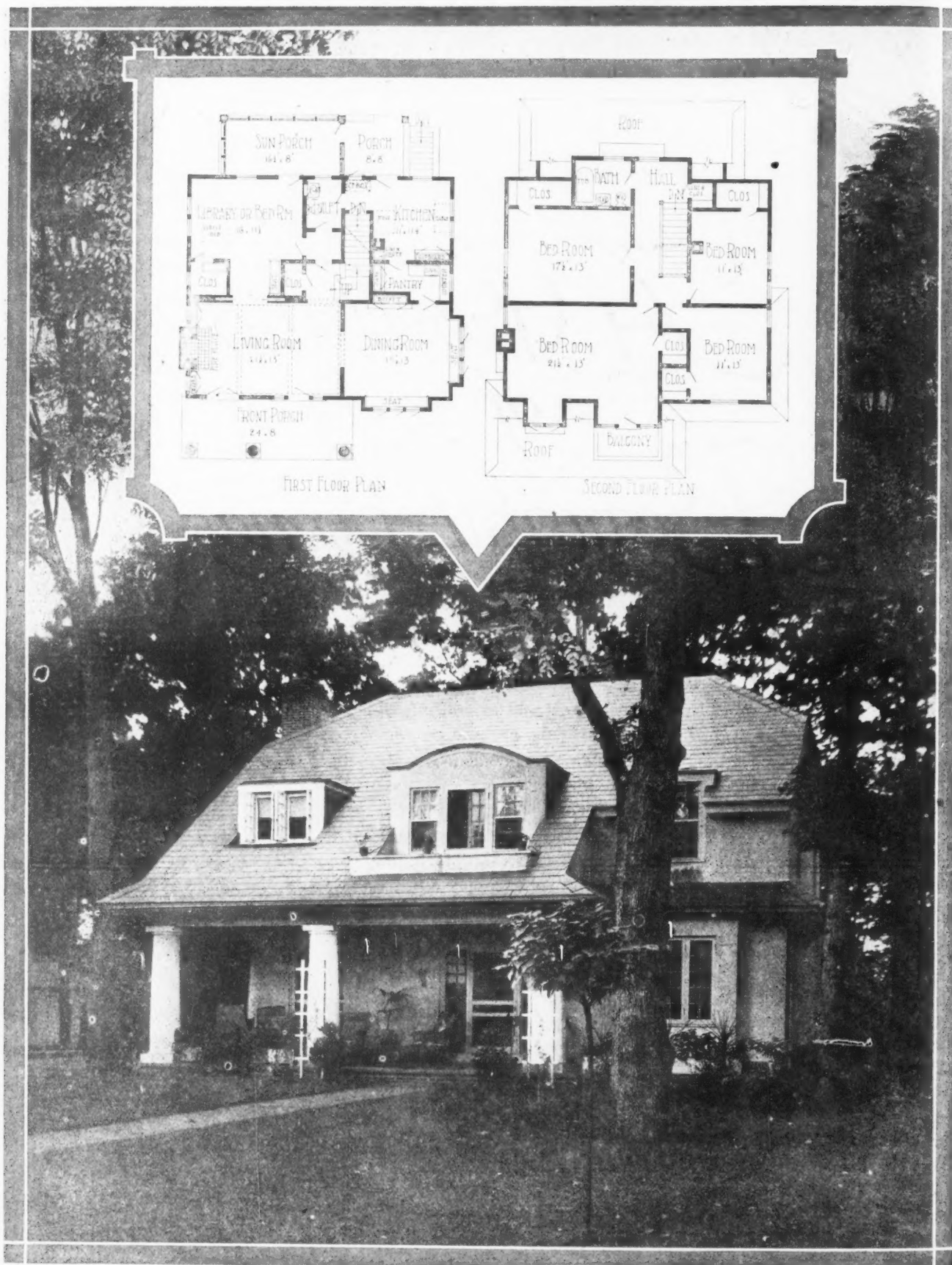
DWELLINGS of modest size, but of surpassing beauty, are available to builders in every community—dwellings, complete in their every appointment and so skillfully designed that they please both the eye and the purse.

When building a HOME it is a pleasure to be even a little bit *extravagant*; for the many years of satisfaction will more than repay.

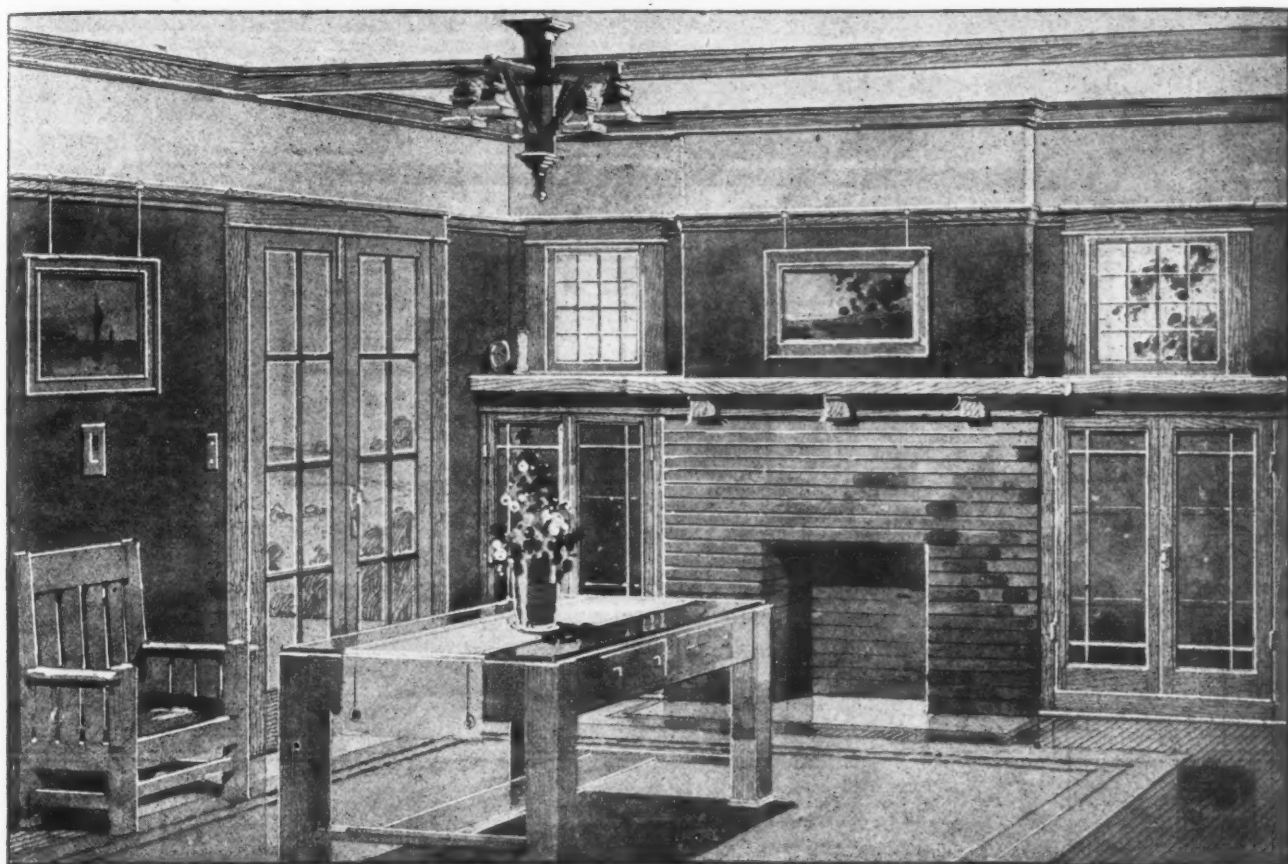
It is with considerable pleasure that the AMERICAN BUILDER presents this group of extraordinarily beautiful examples of modest home designing. If further details are desired regarding any one of them, a letter addressed to the publication office, Chicago, will bring full information.

HOME PLANNING EDITOR, AMERICAN BUILDER.

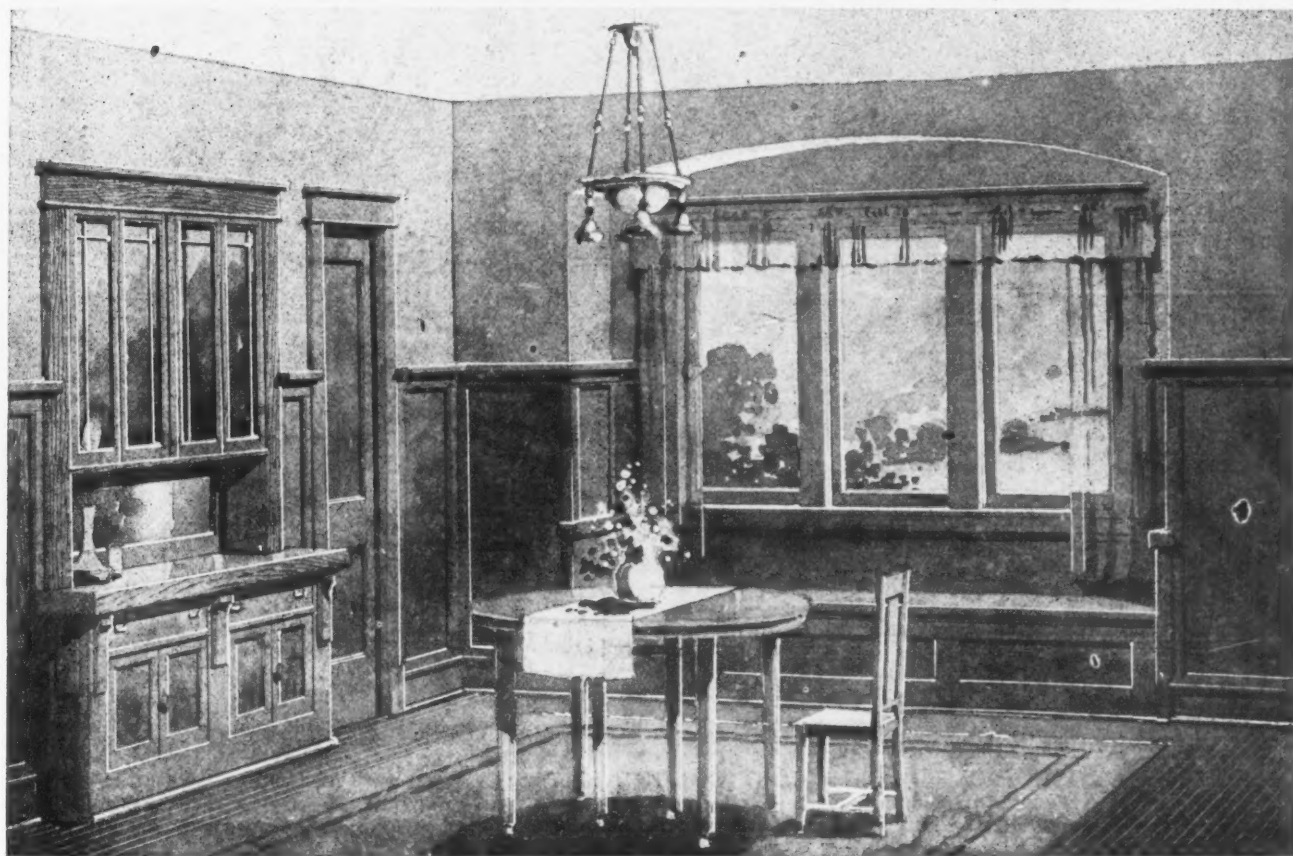




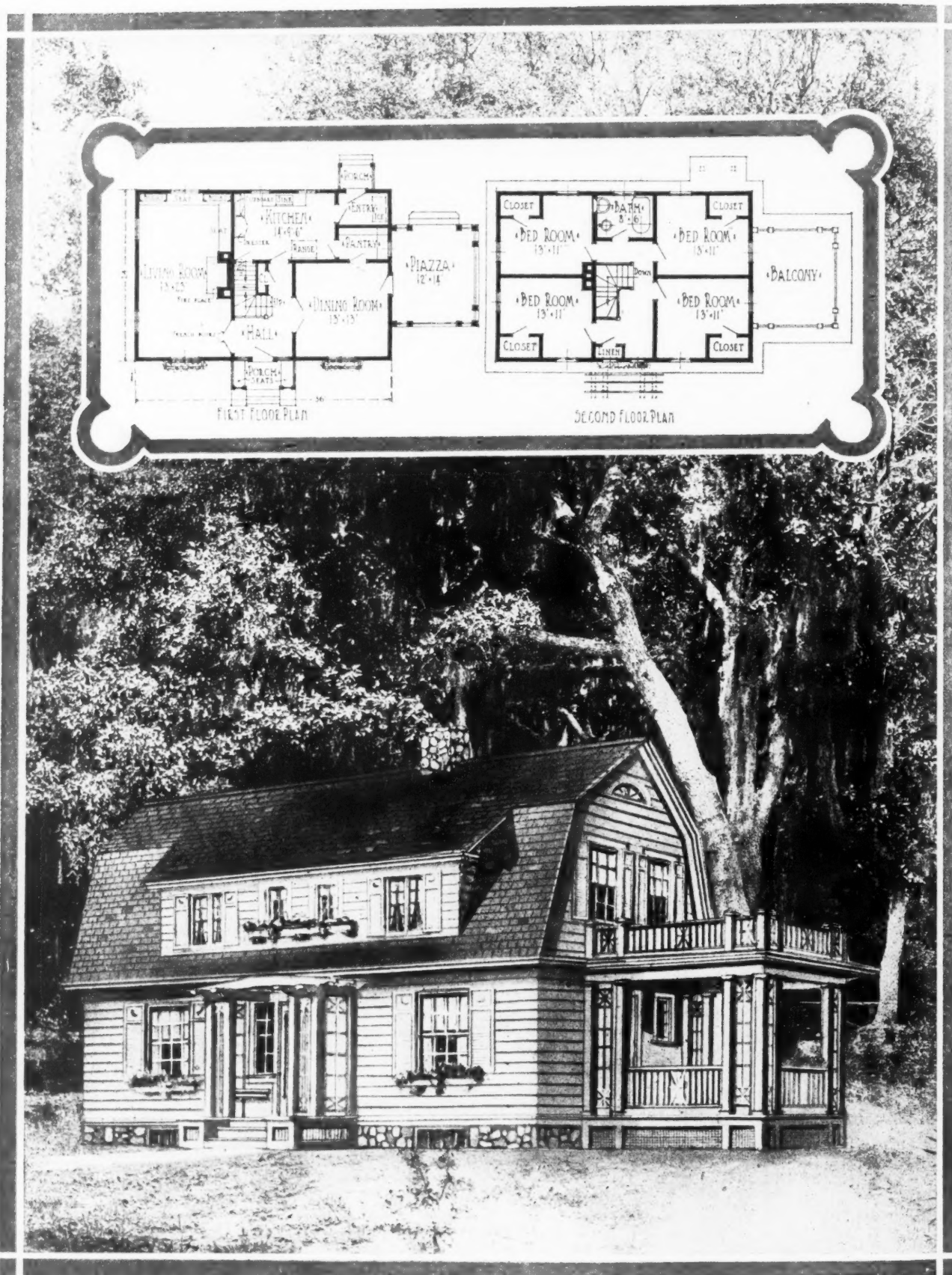
SOLIDITY IN HOME DESIGNING. This modern Dutch Colonial dwelling rests on the ground snugly with a look of permanency and solid comfort. It has eight fine rooms, all conveniently arranged. Notice the sweep of living room and dining room across the front of the house; also the library with closet bed. The size of this concrete, slate roof home is 38 by 31½ feet. Our design number is 6923.



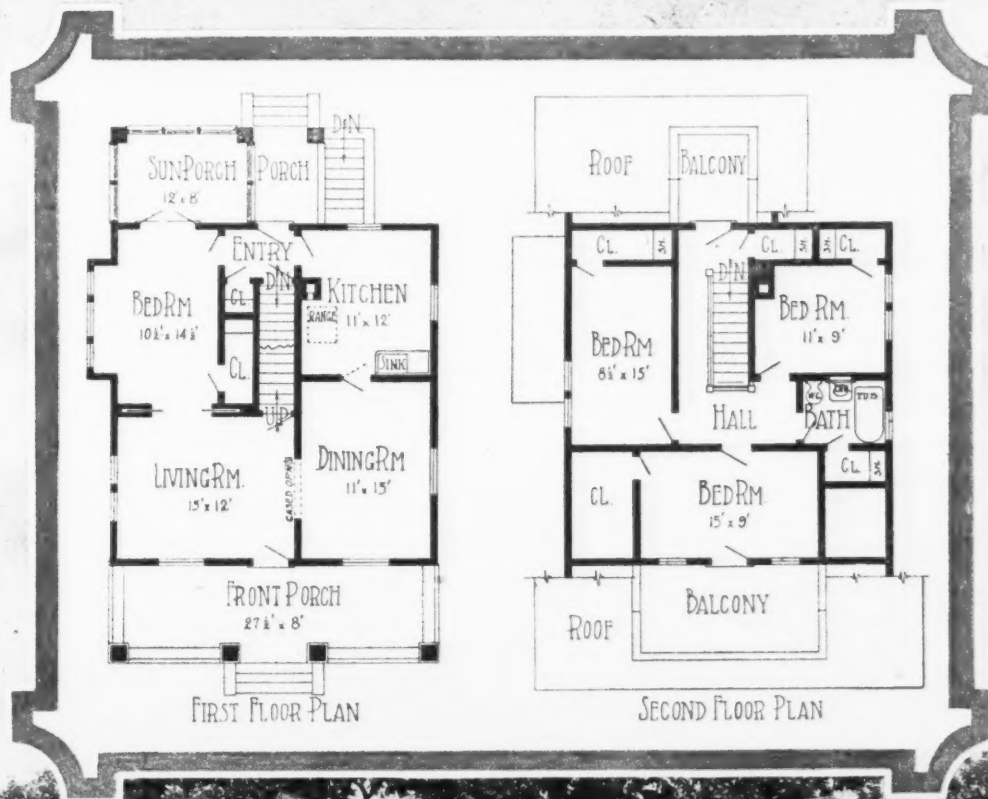
View of living room in Colonial home shown on opposite page, looking toward the front porch and fireplace.



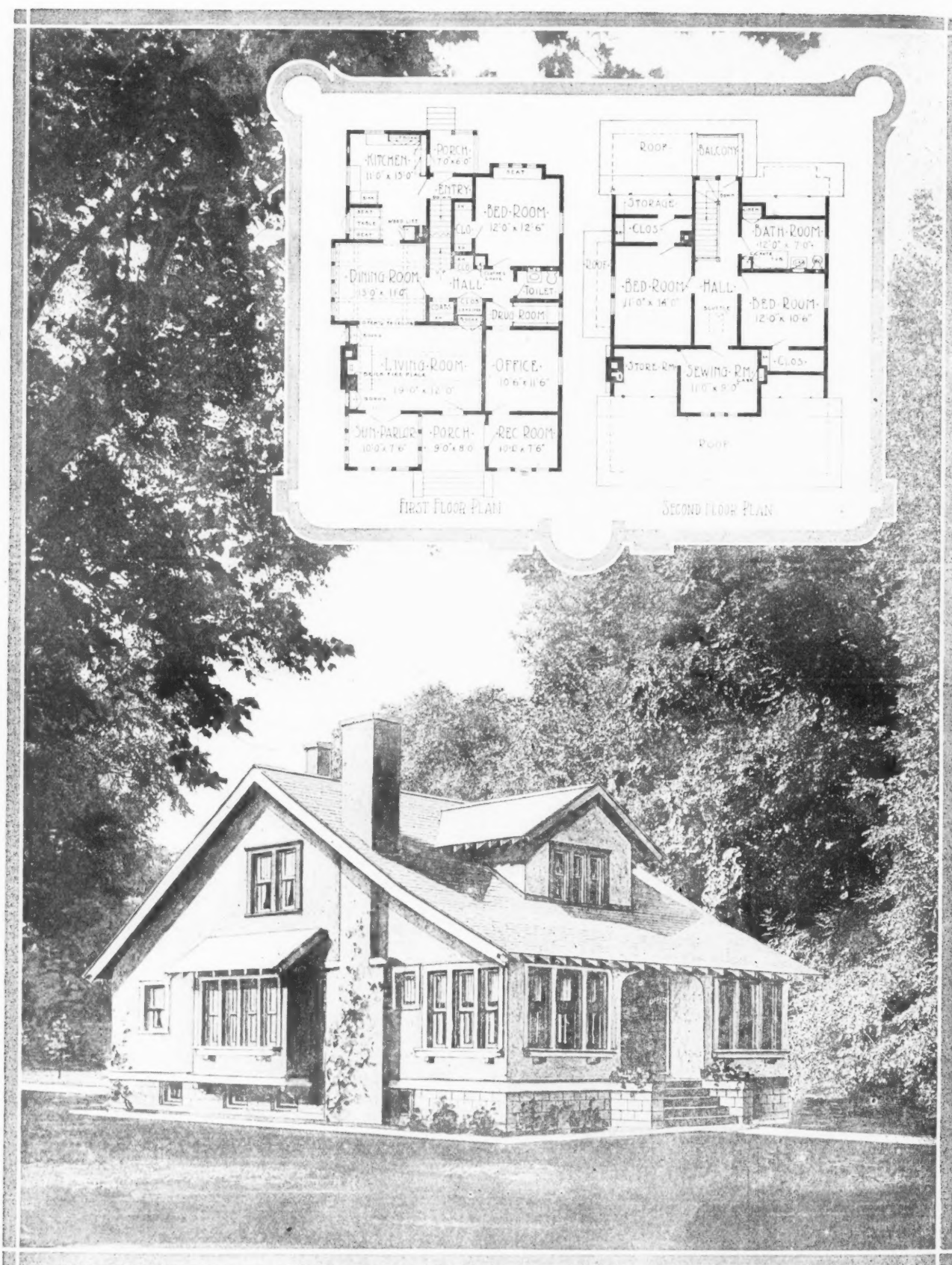
Interior View of Beautiful Dining Room in Residence Shown Opposite.



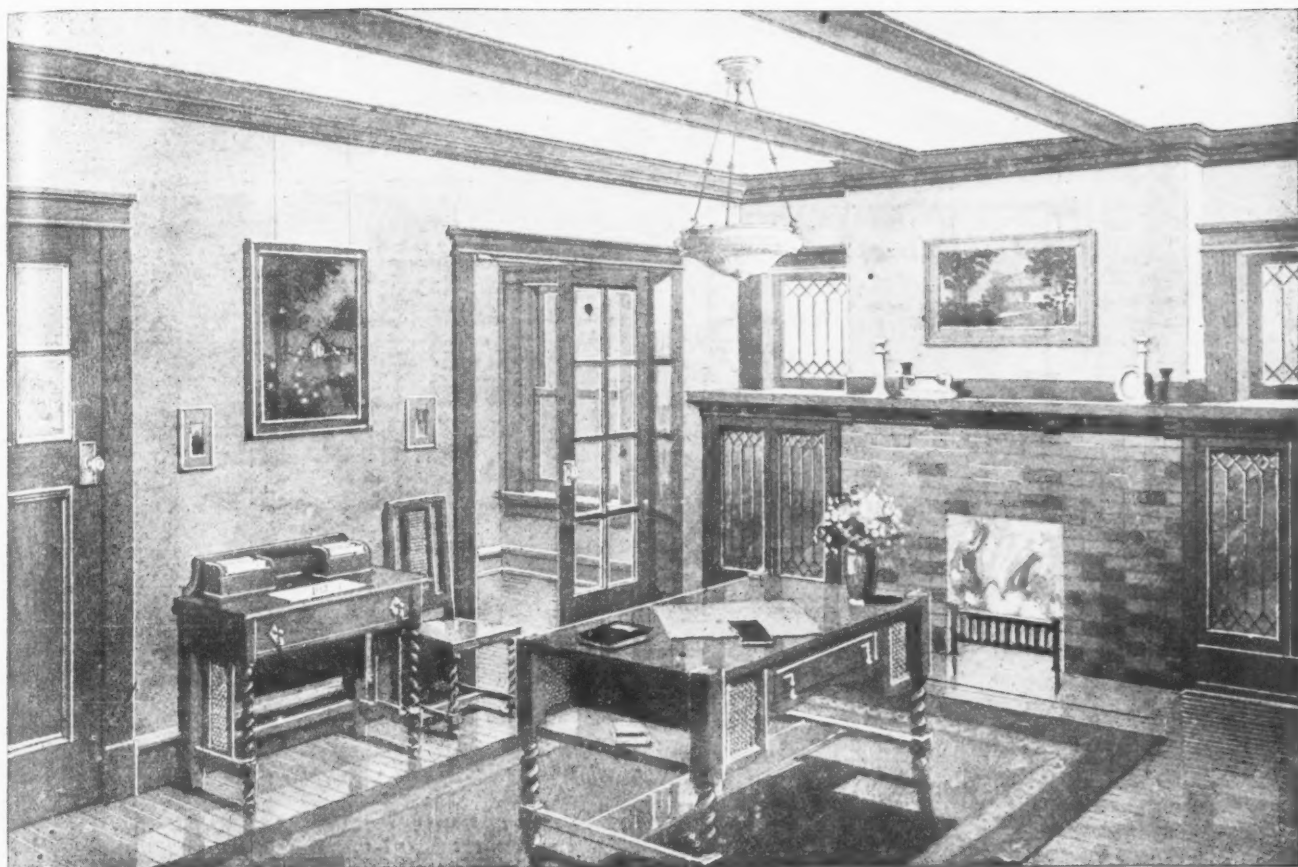
A BEAUTY AT THE PRICE—A LOW-COST COLONIAL. Here is a seven-room dwelling, size 36 by 24 feet, designed in the true Dutch Colonial style. Every foot of space is used to advantage—conveniences are built in on all sides. Notice that immense living room; the entrance-French doors, placed away at one end, makes the far end of this room a real retreat. Our design number is 6821.



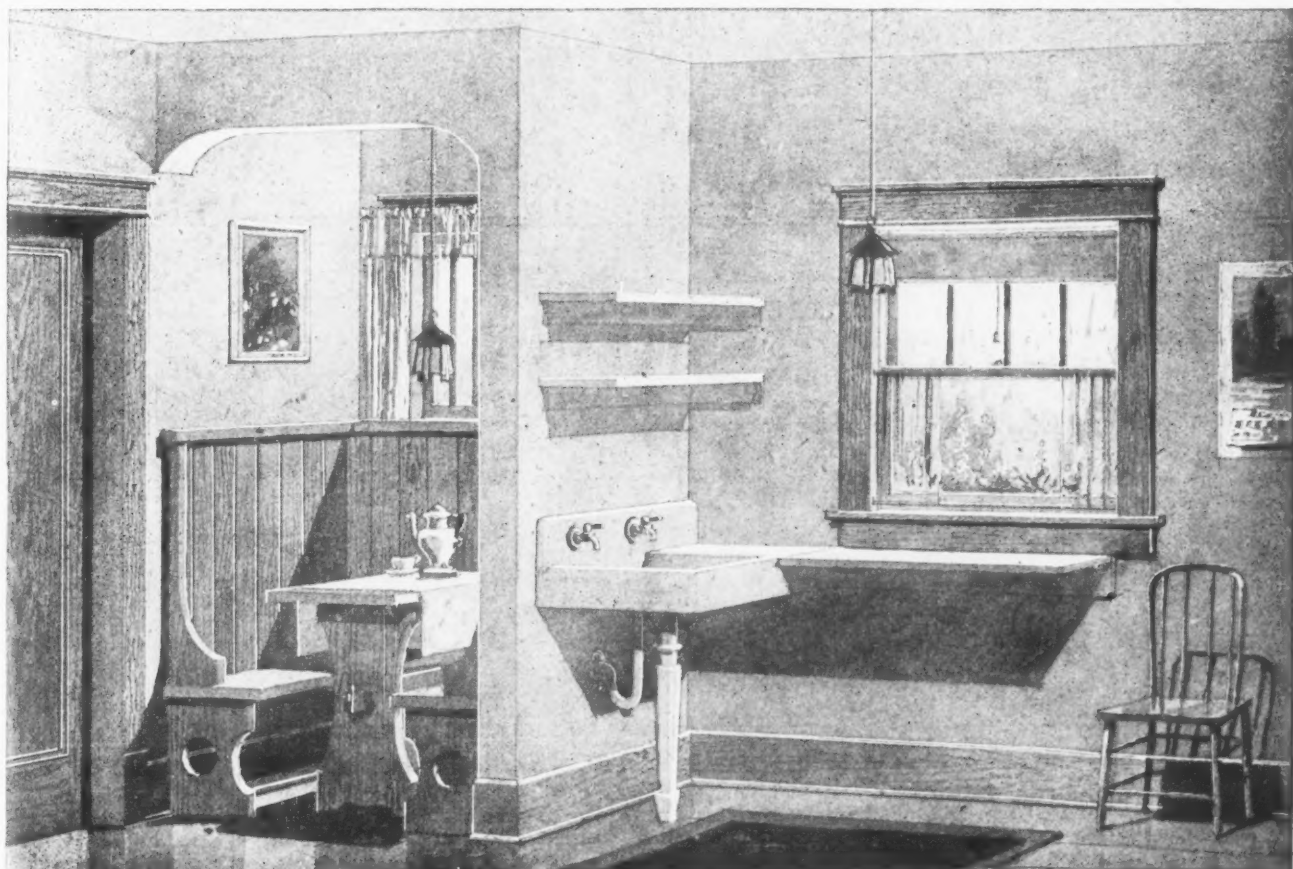
STORY AND A HALF BUNGALOW. Real beauty can and should grace even the commonest of houses; beauty is largely a matter of proportion—and costs no more. This little home has seven nice rooms; is $27\frac{1}{2}$ by $28\frac{1}{2}$ feet in size. Special features are provided such as the sun porch on the first floor and the front and rear balconies above. Our design number is 6925.



DOCTOR'S RESIDENCE WITH OFFICE. Here is a good example of the handling of this special problem. Convenience and at the same time privacy have been secured. There are nine rooms in this cement stucco dwelling. Size is 31 by 42 feet. Notice the breakfast nook off the kitchen; also the sun parlor which balances the office reception room. Our design number is 6838.

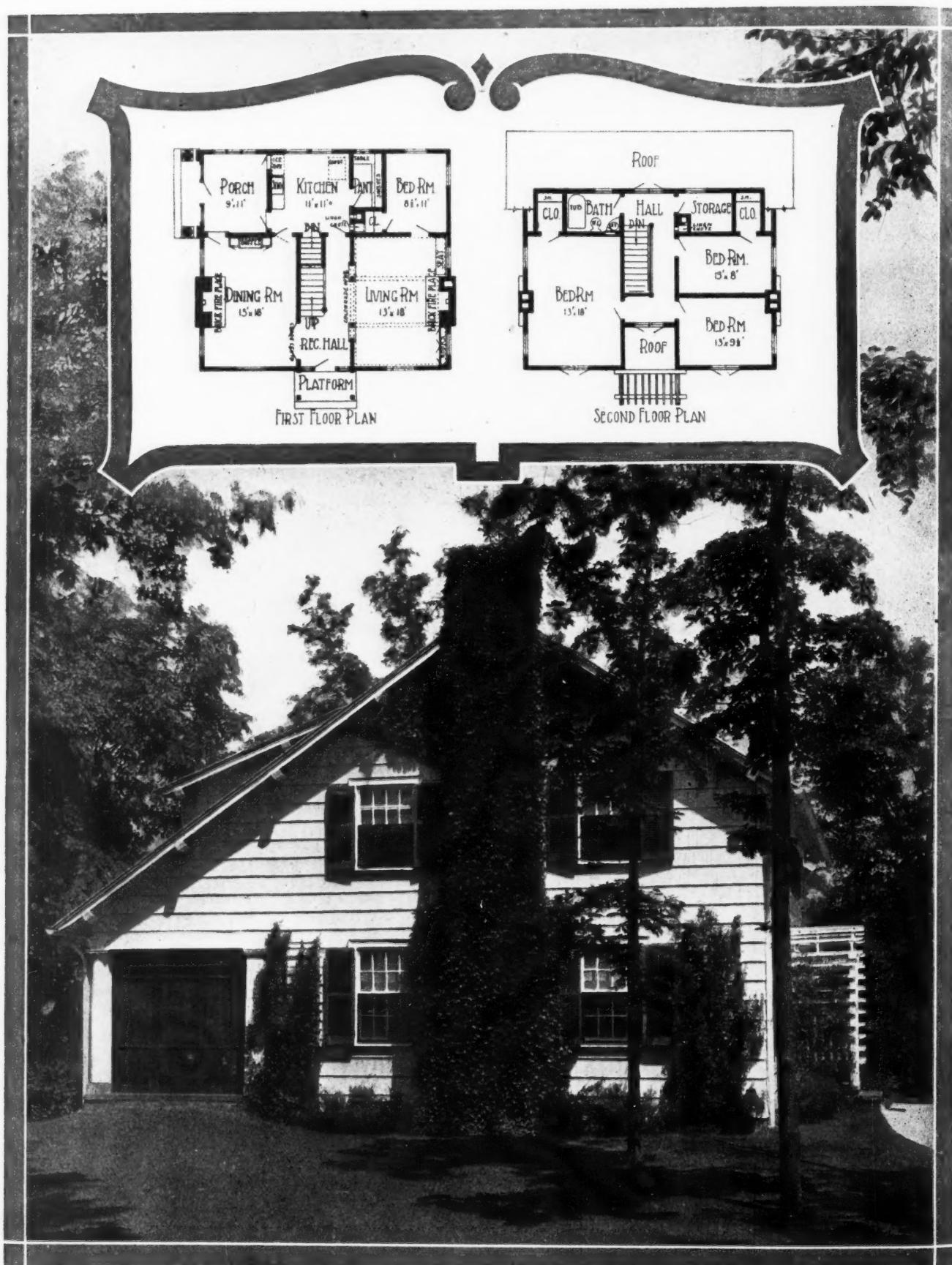


View of living room in Doctor's residence illustrated on opposite page, looking toward the sun parlor.



The Kitchen with its breakfast nook or alcove is an interesting feature of the Doctor's residence illustrated on the opposite page.

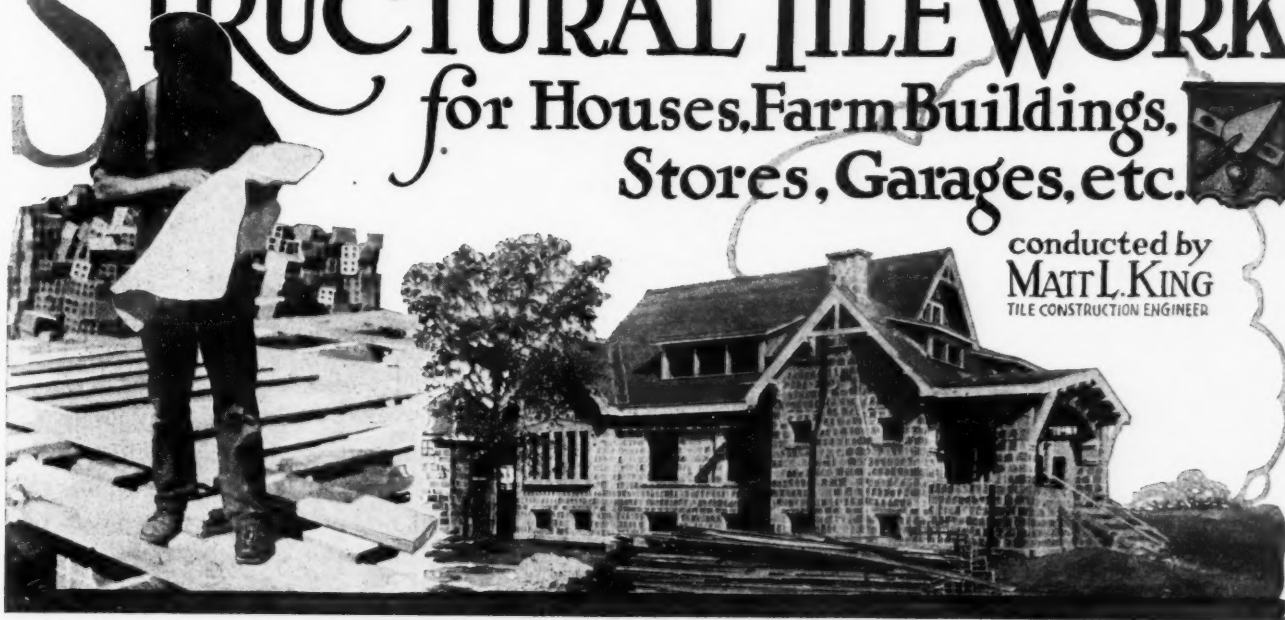
A Portfolio of Beautiful Homes



A NATURAL BEAUTY. This dwelling is the sort that seems to love the vines and shrubs and trees that enrich it—a Dutch Colonial design with wide spaced boarding, painted white, and green blinds. There are seven fine rooms. Their arrangement follows the balanced style with central hall that is the proper thing for houses of this style. Size is 35 by 30½ feet. Our design number is 6924.

STRUCTURAL TILE WORK

for Houses, Farm Buildings,
Stores, Garages, etc.



conducted by
MATT L. KING
TILE CONSTRUCTION ENGINEER

Weight of Floors and Walls, The Width of Foundations and the Strength of Hollow Clay Blocks

By Matt L. King

TAKE for example a residence, two stories and a basement. The walls from the bottom to the top will not average 30 ft. by considerable, but let's figure it that way. Safety first. The average span in the residence will not be 20 ft., but if we figure it that way there will be one-half of each wall that is 10 ft. That makes it easier to figure and we will find when we get thru we will have strength to spare. I came near saying strength to burn, but it won't burn in this case.

Figuring 40 lbs. live load on the walls and 35 lbs. wind and snow load on the roof, each block in the bottom of the foundation walls will have to carry a piece of a wall 1 ft. long and 30 ft. high, together with a 10-ft. strip of floors and roof 1 ft. wide. The average dead weight of floor and roof will not be 35 lbs., so if we figure the total of dead and live load of floor and roof, 75 lbs. will more than cover the same.

An 8-inch wall per ft. in height will weigh less than 50 lbs. Also the wall load 30 ft. high will be 1,500 lbs. The estimated floor and roof loads combined amount to a total of 2,250. Adding the 1,500 wall load gives 3,750 lbs.

It is needless to say that both floors and the roof will never be loaded to the limit of the above estimate. At the same time show your customer that tile will stand many more times than this maximum. A 8 by 5 by 12 block will stand from 75,000 lbs. up.

Any block that would be fit to put into a wall at all will not crush at less than 75,000 lbs., which is 20 times as much as the estimated load of 3,750. This gives

the factor of safety at 20 where 8 would be entirely satisfactory. In fact even a 4 by 5 block with only one air cell and two vertical walls would have abundant strength for this load.

The question of stiffness and stability of walls have entered in and will be considered later so that an 8-in. wall is the only thing that need be considered at present. The question of the strength of hollow clay blocks is often a puzzle to those who are not familiar with this material. It does not seem reasonable that it would come so near the strength of brick. This, however, has often been explained by the fact that the thin wall of this building tile is so very uniformly burned.

The strength of a chain of course depends upon the

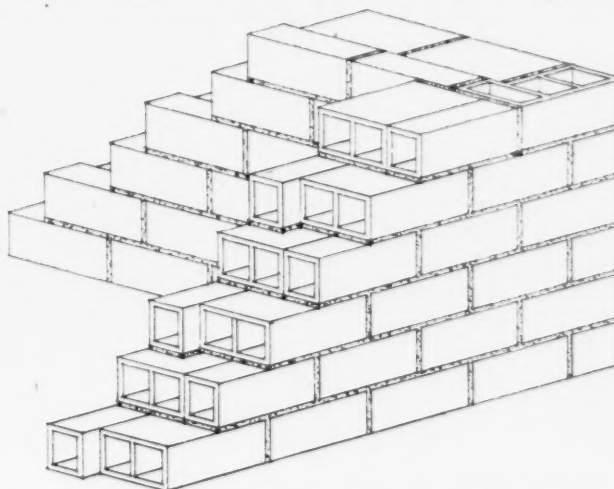


Fig. 1. Corner and Jamb Blocks, Permitting the Blocks in Each Course to Break Half Way Over Those in Course Below.

weakest link, therefore it becomes a question of looking over the wall. If the mortar is weaker than the block, then any additional strength of block would be of no service whatever. The block having a strength

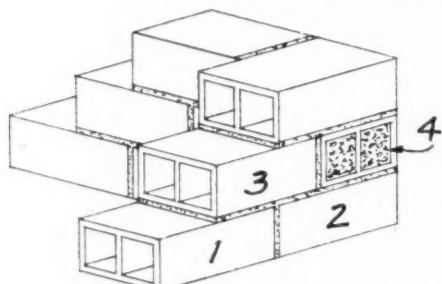


Fig. 2. In Building an 8-Inch Wall of Standard Blocks a 2-Inch Piece Has to be Broken Off Block 4.

of 75,000 lbs., which is below the average, would require the mortar to sustain 780 lbs. per sq. in. We all realize that this requires a

pretty fair cement mortar to support such a load.

Further question of strength of blocks for special purposes will come up later and questions are always in order and more than welcome. They are solicited. However, the above statement as to strength of blocks will probably be sufficient for the present.



How to Lay Up Tile Corners and Jambs

ORDINARILY structural tile manufacturers furnish blocks of the right shape and size to form the corner blocks and jamb blocks. In these places are required special sizes and shapes.

If these are for a horizontal system of blocks they are generally stood on end, cut to the same length as the height of the other wall material and of such width and shape that they can be reversed in alternate courses, causing the remainder of the wall blocks of each course to break half way over the blocks of the courses below. These are seen in Fig. 1.

Not all manufacturers make these special joint and corner blocks, therefore it is necessary for a builder to be acquainted with best methods of making their corners and jambs from standard blocks. This method is used more often on jobs that are stuccoed or

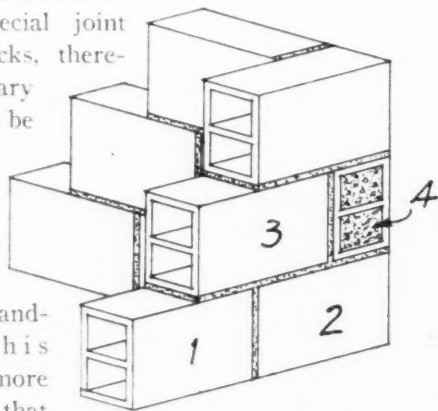


Fig. 3. Corner of 5-inch Wall.

faced with brick, and is good even when not covered but does not look quite as well.

For corners built from the standard blocks, the ends are closed with cement mortar. This is accomplished by simply standing blocks on any smooth surface such as a plank or floor to which cement will not stick. Put enough cement mortar or concrete in to fill the blocks up about an inch or two. If these blocks are wanted in a hurry the mortar or concrete can be mixed

with a little gypsum plaster. This will cause almost immediate setting up.

These ends should not be filled more than two inches as this will reduce the air space, and therefore the insulation, unnecessarily.

In order to bond properly on an eight-inch wall it is necessary in using standard blocks to cut 2 inches off the end of block No. 4, shown in Fig. 2. You will readily see this brings the end of No. 3, 18 inches from the corner which is just to the middle of the block directly above and below. Blocks No. 3 and 4 have filled ends.

A thick wall would be worked the same way, but a five-inch wall requires different treatment. Figure No. 3 shows how to balance this bond up accurately.

One inch should be cut off the end of block No. 1 or 2. It is generally more convenient to cut No. 1, as you are then cutting a standard block rather than one with filled end, but it looks slightly better balanced to cut from the end of No. 2.



Stock Sizes of Building Tile

THE common sizes of hollow clay blocks are 8 by 5 by 12, 4 by 5 by 12, 8 by 8 by 12, 8 by 12 by 12, 4 by 8 by 12 and 4 by 12 by 12.

The standard block is 8 by 5 by 12 and has two cells or spaces. The thickness of the shell is $\frac{5}{8}$ to $\frac{3}{4}$ inches. The per cent of air space in a vertical section of block is 70 to 75 per cent. The air space in a horizontal section is 72 to 76 per cent. The weight of this block is fifteen pounds.

Reason for Shapes and Sizes—5 by 8 by 12 Block

The length of 12 inches is natural. It is a simple unit for calculation and convenient to the manufacturers. The relation between the length and width is not important as they do not cross except occasionally at the corners.

The width of 8 inches has become standard for brick. Therefore this standard is natural, as it is used with brick a great deal. If used with 4 by 5 by 12, the combination will give same widths of walls as brick.

The reason for the height of 5 inches is to use the block conveniently for backing brick; and bonding with same will permit any odd course above one to be a header course. Fifth, seventh and ninth courses are used, but perhaps the seventh is the most common.

Eight by 8 by 12 blocks are used in small buildings, principally when the size forms the whole wall. The block is symmetrical in all ways and makes the wall of standard width. It lays up more rapidly and economically than 8 by 5 by 12. The amount of clay and mortar in the wall is less and strength is about the same as 8 by 5 by 12 walls.

Four by 8 by 12 and 4 by 12 by 12 as used in walls are mostly for 4-inch walls and partitions.

Seventy Tons of Hay Burned

TILE BARN CAN BE REROOFED AND REFINISHED AT A FRACTION OF TOTAL FIRST COST

By C. L. Rorick

YOU want to be in a position to give full and reliable information concerning the use of burned clay. One of the questions that will be asked you will be: "How will a barn stand if 60 and 75 tons of hay burned inside?" Show them this picture.

Naturally the roof, floor and doors burned out. This barn is located near Van Meter, Iowa. The blocks were a good, hard, red block. The barn was practically full of hay when one evening, so far as can be learned, a widely traveled gentleman of leisure must have gone into the hay mow to sleep.

He probably hung to his cigarette right to the bitter end, and it was hot. He threw it away, and before morning there was a real fire on that farm.

Of course part of the above is guess work. But we actually know that a few pieces of human bones were found in the ashes and no one was missing in the community. We also know that everything around that barn that would burn burned.

The north gable was not built of tile. Part of the south gable was pushed over by the falling roof, and

what remained was cracked so that considerable of it had to be torn down, but as will be seen from the picture there was quite a portion of the south gable left standing.

The walls were in good shape, easily repaired, and it was a comparatively easy matter to put in the wood-work, put on a new roof and the barn was built again. It cost some money to do it, but the cost of rebuilding was only a small part of the original cost of the barn.

If a little steel reinforcing had been used in the top of these walls the repair job would have been much less. We will go into that subject of reinforcing further in a subsequent issue.

Another important factor was that, tho the roof went up in smoke and blazing shingles blew over the farm, the fire was confined much more than tho the entire building had burned.

The result was much less danger to the other buildings on the farm and with what little fire fighting ability existing on this farm all other buildings were saved.



This Barn of clay block construction, located near Van Meter, Iowa, was filled with seventy tons of hay, which burned the interior and destroying the roof. The tile walls were very little damaged, and the "remains," as illustrated in photo inset, were restored to original usefulness at a fraction of the original cost of the building. An interesting side light to this circumstance is the fact that the owner collected full insurance as for a complete loss before starting to rebuild.

Stucco Finishes for Hollow Tile Buildings

HOW TO MIX THE MATERIALS, APPLY THE STUCCO AND FINISH IT IN ALL THE POPULAR EFFECTS—ELEMENTS OF COST

By J. J. Cosgrove

THERE is no part of a building it will pay the owner or builder more to make a study of than the exterior. It is the general appearance of a building from the outside which first attracts the attention of a prospective purchaser or tenant, and later leads to a sale or lease if the interior is in keeping with the promises of the exterior. Build, then, to attract, to create in the hearts of those who behold, a desire to possess. As you walk along the street, buildings of all kinds meet the eye. Some are so characterless in design and detail that they are not noticed, and after passing them it would be hard to recall one feature they possess. Others are loud or fussy, and seem to intrude their presence on the landscape, disfiguring it instead of adding to the beauty. Still others are so soft and attractive, blending with the background and surroundings so harmoniously, that a desire to possess, to own, takes possession of the beholder, and the sale is more than half made if the price is within the resources of the purse.

What are the distinguishing features which make for the beauty of a building? How can the builder or owner reduce success in this respect to a simple formula? Simply by remembering that beauty in a home—or other building—depends on three prime essentials: outline, proportion and surface treatment or finish.

Of the three essentials the builder is concerned most with the last. Outline and proportion belong to the art of the architect. It is part of his training to

proportion the parts of the whole and design the building with a pleasing outline. It is part of his art, also, to advise as to the finish or surface treatment of the walls, but too often the right to do so is taken from him by the peremptory instructions to make the walls of a certain material.

Therein, too often, lies the real success or failure of the building from both an architectural and a commercial standpoint. A finish or treatment which might have been beautiful in a large monumental building, or in a broad expanse of wall space, might be wholly out of keeping in a smaller building or in a wall space well cut up with window and door openings. Stone, for instance, limestone and granite, are noble materials for monumental buildings; but, did you ever see an attractive small dwelling of cut stone?

Of all the exterior finishes for buildings there is none, perhaps, more interesting than what is known as "pebble-dash." Classed as stucco finish, it is more than that. The coat of cement stucco forms only a matrix in which is bedded an outside layer of pebbles, half bedded in the mortar and half exposed to the weather.

Nowhere are there more pleasing examples of this exterior finish to be found as in and around Philadelphia, where old colonial homes can still be found with pebble-dash finish applied to stone which has weathered the storms of centuries and grown mellow and richer with time.

The beauty of pebble dash lies in its rough, irregular but continuous surface, free from joints or breaks of any kind to mar its continuity.



Modern Structural Tile Bungalow in a Chicago Suburb finished very attractively with smooth sand finish stucco. Detail of scored face of block with square of stucco applied is illustrated in the upper left-hand corner.



Ten Thousand-Dollar Residence of John G. Meister, Toledo, Ohio. M. M. Stophlet, Architect. Roof is Green Tile, Walls Clay Blocks Stuccoed Rough Cast Finish. Detail of Scoring on Face of Blocks and of Stucco Finish Illustrated in Lower Right-Hand Corner.

How To Put On Stucco

Pebble-dash is applied in the following manner: The hollow-tile wall is thoroly sprayed with water before the first coat of plaster is applied. This coat is known as the scratch coat and should be at least $\frac{1}{2}$ inch thick outside of the surface. Plaster for the scratch coat should consist of one part Portland cement to three parts of sand, and lime putty not to exceed 10 per cent of the volume may be added to make it "butter" more easily. The first coat must be well scratched before it sets.

PEBBLE-DASH—Before the second coat is applied, pebbles of various sizes are screened from the sand and placed in boxes on the scaffold. For ordinary work the size of the pebbles will vary from $\frac{1}{4}$ inch to $\frac{3}{4}$ inch. Beginning at the top and working downward, the second coat of rather wet mortar is applied to the wall, covering a couple of yards surface, then before the mortar loses its plasticity the pebbles are thrown forcibly against it with a paddle, where some become embedded and remain, and others fall to the ground below.

A light buff or yellow tint is the most pleasing color for pebble-dash, and usually for stucco finish of any kind. With this a white trim is the most effective. The buff or yellow tint is secured by mixing yellow ochre with the plaster. A very faint tint or tinge of yellow is to be preferred to a more pronounced yellow color.

In pebble-dash finish a pronounced color cannot easily be obtained for the reason that only the plaster

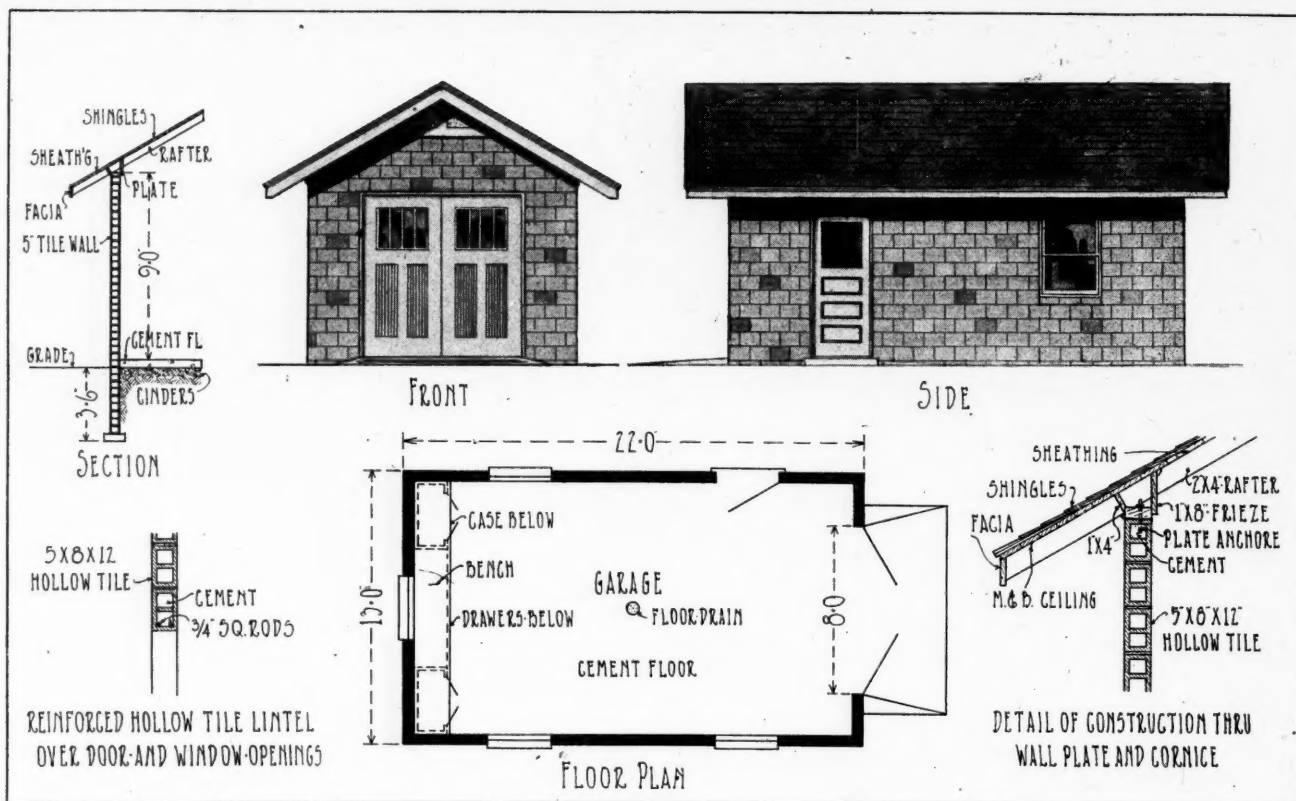
takes on the color while the pebbles retain their natural hue. If, therefore, the background of plaster should be a deep slate color, the pebbles would show lighter on the surface, thereby contrasting instead of blending with the plaster.

ROUGH CAST—Dash finish, also called "rough-cast," is secured by throwing the mortar for the second coat on the walls with a wooden paddle. This gives a rough, irregular surface of mortar, very like the surface of pebble-dash, but it is not so attractive a finish. The ground, or scratch coat for all stucco finishes, is alike; it is only in the finish coats that they differ. The finish coat is about $\frac{1}{4}$ inch thick, except for pebble-dash when a deeper bed of plaster is needed to hold the pebbles. For cement color finish the proportions of the mixture are one part cement to two parts clean, sharp sand.

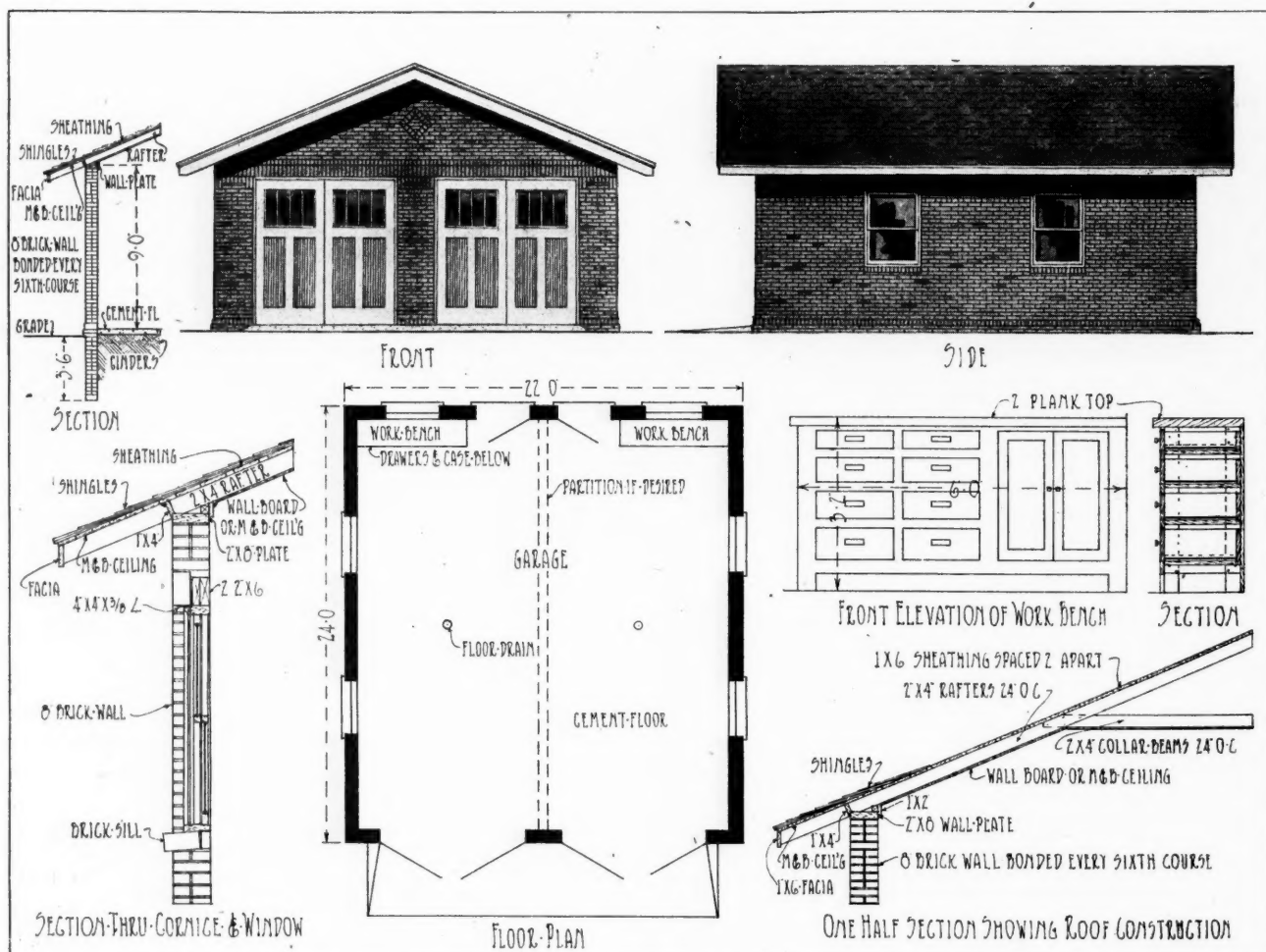
SAND FINISH—There are two types of sand finish, the rough sand-finish and the fine sand-finish. The rough sand-finish is obtained by covering the float with burlap and floating the finish coat when it is quite dry. The fine sand finish is obtained by floating the wall in the usual way.

There are great possibilities in the fine sand-finish when properly planned and properly applied. An apartment house, hotel, or other large building can be given a finish that rivals marble or limestone by using materials light in color, fine in texture, then floating them to a smooth granular surface of about the roughness of sawed stone.

(Continued to page 120.)



Fireproof One-Car Garage with 5-inch Hollow Tile Walls Laid Up of 5 by 8-inch Tiles. Floor and Approach are Concrete. This is Our Design No. G179.



Fireproof Two-Car Garage of Brick Construction. An 8-inch Brick Wall With Good Looking Face Brick Front and Common Brick Backing. Floor and Approach Are of Concrete. This is Our Design No. G182.

Low Cost Houses For Employees

THE SOLUTION OF THE PROBLEMS OF INDUSTRIAL HOUSING, ON ECONOMIC LINES, WILL BE ONE OF THE GREATEST CONTRIBUTIONS TO INDUSTRIAL EFFICIENCY AND TO THE WELFARE OF THE WAGE-EARNER—IT PRESENTS ONE OF THE TRULY GREAT BUILDING OPPORTUNITIES OF TODAY

By John Nolen

City Planner, Cambridge, Mass.

LORD SHAFTESBURY, after sixty years of unusually fruitful philanthropic effort, wrote these significant words: "I am certain that I speak the truth, and a truth that can be confirmed by the testimony of all experienced persons, clergy, medical men, and all who are conversant with the working class, that until their housing conditions are Christianized (I can see no less forcible term), all hope of moral or social improvement is utterly in vain." This statement is one of many that might readily be quoted to express the conviction of observing and experienced persons as to the fundamental, social and moral importance of the home of wage earners. But I do not intend to speak of the social and moral sides of this problem. I want to dwell briefly upon some of its economic aspects, because I believe that the ultimate solution is to come mainly in that direction.

To begin with, housing from the point of view of economics is a big business, and should be handled as a big business is handled. Building operations in the United States amount annually to the stupendous sum of four billion dollars, and sixty per cent of this great total, or two billion, four hundred million dollars is spent (I should like to say invested if I could), in dwellings. Much of this immense sum, in fact, most of it, from an economic point of view is not well or permanently invested. A large percentage of all houses are poorly conceived for their purposes, and eighty per cent of all of them are built of wood, many of these under space and distribution conditions which make wood unsafe and unsatisfactory. The result is an excessive depreciation and a fearfully costly fire hazard. This constitutes a huge economic loss amounting by the most conservative estimate to hundreds of millions of dollars annually, which sum must be paid, as other carrying charges are paid, out of production, and finally must be taken care of in the wage earner's pay-roll. This statement is typical of a number that might readily be made and supported by facts and reliable data, to show the broad dimensions of the subject, which we too often think of simply as the little house in which we live. Therefore the solution of the housing problem, or rather problems (for the subject is many-sided), is not going to be easy, and is not, I fear, to be had quickly.

Housing is intimately and permanently related to other very large and difficult economic questions. As an illustration I have already mentioned the building interests, materials of construction, and the loss by depreciation and fire. I might add land and taxation, and the radically conflicting theories that prevail at present as to what is best in that field. Another subject is public health and sanitation, and the possibilities of

preventive medicine as applied to the home. Then we have the present awakening to the effect of city planning upon housing—how it is influenced by the location of factories, by the proper districting of the city, and by other building regulations, by the street system and means of transportation; by the proper apportionment of parks, playgrounds, and other facilities for recreation. This relationship of city planning and housing is illustrated in a recent report of an English architect, who has pointed out that many housing schemes have been carried thru as if they were isolated phenomena—just as tho a physician were to attempt to cure a body permeated with scorbutic disease by applying a soothing salve to a few sore places on the face and hands.

Another fundamental question closely related to housing is that of wages and standards of living. Consider, for example, these four points, and their relation to one another:

1. The minimum desirable house of four or five rooms cannot be provided in the United States for less than about \$1,800 or \$2,000—that is, for house and lot, with street improvements, essential public utilities and neighborhood recreation.
2. A house costing that sum cannot be offered on the basis of an economic rent of, say, five per cent or six per cent net, for less than \$15 per month.
3. Unless a wage-earner with a normal family of wife and three dependent children has an income of \$15 a week, or \$800 a year, he cannot afford to pay as much as \$15 a month for rent.
4. More than one-half of all the fathers of workingmen's families earn less than \$15 a week.

Thus we see that no solution of the housing problem in its most acute form, affecting more than fifty per cent of all wage workers, is possible until a better adjustment can be made in the relation of these four points. Here is our choice. Either the cost of the house and lot must be substantially reduced, or the standard of healthful living must be lowered, or the wages of the poorest paid workmen must be raised. The other three possible alternatives are to put the wife and children to work to add to the family income, to take in boarders or lodgers, or to count upon private philanthropy or the public treasury to provide not a few but great masses of wage workers with a house at less than an economic rent.

What, then, is the first step toward a solution of this large and important problem? I believe it is to recognize that the subject is primarily one for the right application of broad economic principles. We must in some thoroughgoing way convert the great forces which

(Continued to page 112.)



Concrete Construction

How Do You Mix Your Concrete?

TESTING, PROPORTIONING, MIXING, AND PLACING OF CONCRETING MATERIALS FOR SUCCESS IN THE MAKING OF CEMENT PRODUCTS

By C. M. Wood

A GREAT many inquiries have been received from the manufacturers of cement products which clearly indicate that they have still to absorb considerable information as to what concrete really is, how it is made and the reasons. A short and concise definition of concrete would be an artificial stone, made by mixing Portland cement, sand and pebbles, or broken stone, in certain proportions depending upon the nature of the work for which the concrete is to be used. When this mixture is allowed to remain undisturbed it will become as hard as stone and will assume the shape of the form or mold in which it was placed.

There is an erroneous idea that the quality of concrete depends entirely upon the Portland cement used. It is true that a good Portland cement is necessary if good concrete is to result. Nevertheless, Portland cement as manufactured today is a very reliable product. It is manufactured to meet exacting specifications that have been made as the result of extensive experiments and investigations and these studies and experi-

ments are being continually carried on.

Locating the Colored Gentleman

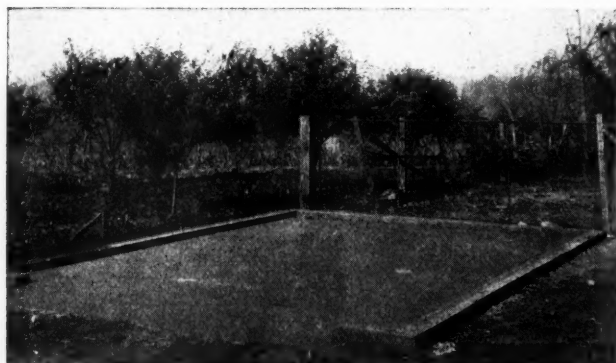
It too often happens when dissatisfaction results from concrete work that the fault can almost invariably be traced, not to the cement, but to failure to observe some of the well established rules or methods, or the selection of sand and pebbles or broken stone, improper proportioning of materials, too much or too little water used in mixing, dirty water, too little mixing of the materials, or lack of care used in placing the concrete and properly protecting it while hardening.

There are certain well established principles of proportioning concrete mixtures which are the result of innumerable tests and investigations. A sufficient amount of water must be used to cause complete hydration of the cement, the amount of cement paste resulting should be of such volume as to fill all of the voids in the sand and the amount of sand-cement mortar thus produced should be of sufficient volume to fill the voids in the coarser aggregate.

Were it possible to obtain and realize ideal conditions the total amount of concrete resulting would be no greater than the original volume of the coarse aggregate or stone.

We find in practice, however, the finer particles insert themselves between and separate the larger ones, thereby causing a resulting volume greater than that of the stone. It stands to reason, therefore, that as it is practically impossible to obtain perfect mixing and absolute density, a small excess of cement and sand-cement mortar is used.

To express this differently, the amount of cement which will fill the voids in the sand is slightly in excess, in the neighborhood of about 10 per cent, and



Every Garage Should Have a Concrete Floor. Begin Work by Putting in the Floor and Wall Footings Right, Then Erect the Rest of the Building.

the amount of sand-cement mortar is approximately 10 per cent in excess of theoretical requirements.

The necessary amount of water to be used is more or less determined by experiment. It has been found, however, that an excess amount of water is best, as a comparatively wet mixture may be worked into the forms better with less puddling or churning. The wet mixture will produce a much more solid and dense concrete but a word of caution should be given here that too much water is as objectionable as too little.

In proportioning materials for making a concrete which is to be impervious to water it is recommended that the amount of cement and sand-cement mortar exceed the voids in the coarse aggregate by at least 10 or 15 per cent. The mixing of concrete has a very great effect upon the resultant quality. The completeness of mixing a batch of concrete does not depend upon the order in which the materials are placed in the mixer. Provided the materials are thoroly mixed after being introduced in the mixer, almost any order of charging may be employed. In machine mixing the materials should be left in the drum for sufficient time, as the strength of the concrete is largely influenced by the thoro mixing of the materials. The time usually specified for such intimate mixing is not less than one minute.

The Ideal Proportions

The proper proportioning of the mixtures result in the strength and density of the concrete in an equal ratio as correct proportions are used. Strength naturally depends in part on using clean, hard, durable sand and pebbles, while density itself depends largely on correct proportioning, yet both strength and density are results of observing the same fundamentals. The theory involved in correct proportioning is that the cement will coat every particle of sand and the sand-cement mortar will coat every pebble or particle of broken stone and be slightly in excess of what is actually required to fill the voids in the mass of coarse aggregate. Unless these conditions are realized, the concrete will be porous, hence not watertight, and the sand and pebbles will not be firmly bound together into one mass by the cement.

It becomes necessary, in order to correctly proportion the various materials entering into good concrete, that careful investigations be made of the physical qualities of the materials under consideration. This investigation can be carried on to great degrees of refinement, altho beneficial results will be obtained if the following points are studied.

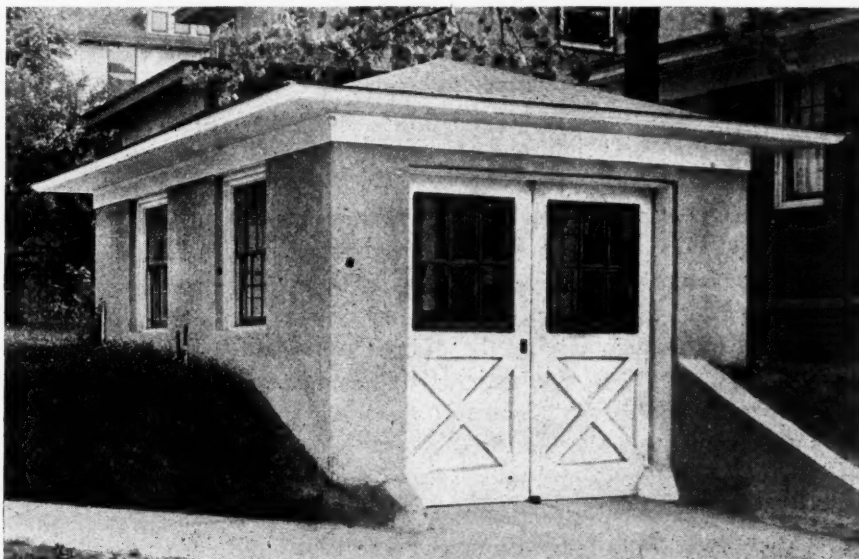
A sample of the material should be sieved on a No. 4 screen and the divided parts measured by volume,

weighed, and the percentages of the original obtained by both methods. The part passing this screen is termed "sand." That retained on the screen is termed "pebbles, or coarse aggregate." The sand should be given the usual analysis of voids, grading and silt. The pebbles should be inspected to determine whether they are clean or coated with clay; whether they contain soft stones or particles which will float or disintegrate. Hardness and toughness should also be noted. It is possible to obtain standard sieves in a great variety of forms, the range in size of the commercial sieves running from a No. 4 to a No. 200.

Safe Mixtures to Use

Certain arbitrary mixtures have been recommended for use in the concrete field and in such mixtures it is well to bear in mind that a mixture designated as 1:2:4 means one sack (1 cubic foot) of Portland cement, 2 cubic feet of sand and 4 cubic feet of pebbles or broken stone. Where the proportions of a mixture read 1:2, it should be understood as meaning one sack (1 cubic foot) of Portland cement and 2 cubic feet of sand.

For instance, in the manufacture of reinforced concrete sewer pipe it is recommended that a mixture of 1:2:4 be used.



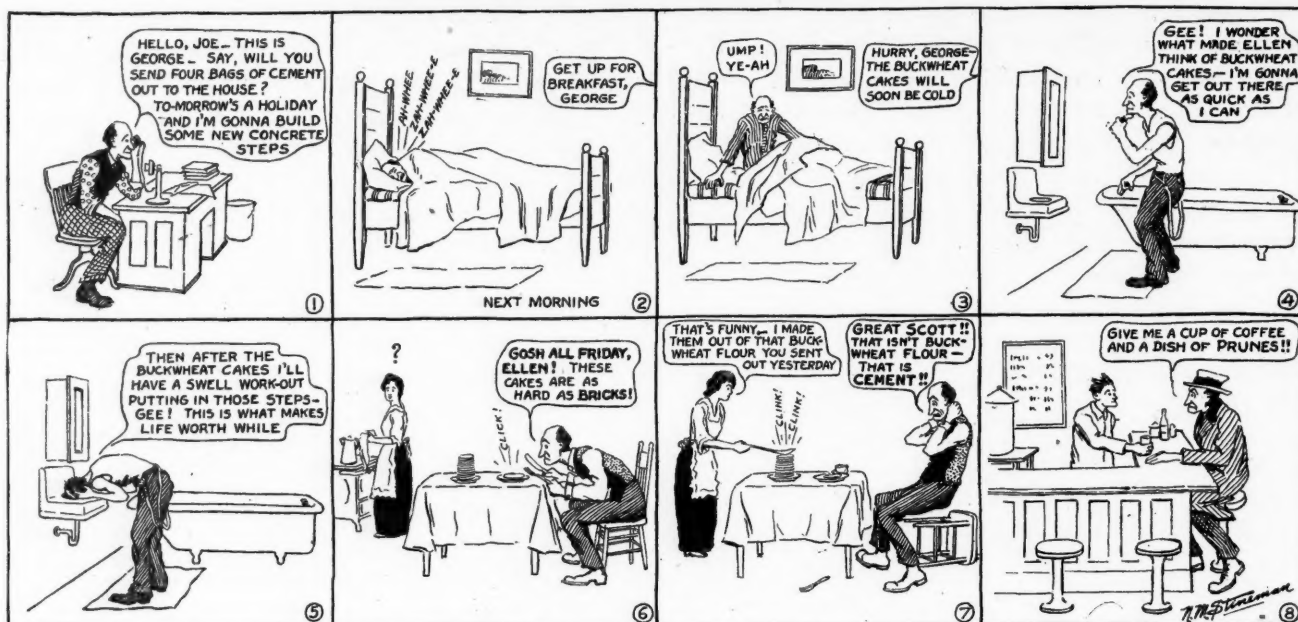
The Popular Concrete Garage Can Be Built in Several Ways—of Blocks Faced With Stucco, of Monolithic Construction, or of Stucco on Metal Lath.

A mixture of 1:2½:4 can be used for the backing of concrete blocks.

A mixture of 1:2½ is recommended for fence posts, when no coarse aggregates are used.

A mixture of 1:3 has been found satisfactory for concrete blocks when no coarse aggregates are used, for concrete brick and for concrete drain tile and pipe when the coarse aggregate is omitted. Ornamental concrete products are likewise made of this proportion.

In the manufacture of concrete blocks, depending somewhat upon the character of the aggregate, the concrete for the body of the block should be mixed in the proportions of 1 sack of Portland cement, 2½



A Thing Like This Might Happen.

cubic feet of clean, coarse sand, graded in size up to $\frac{1}{4}$ inch, to 4 cubic feet of hard, durable gravel, or broken stone, varying in size from $\frac{1}{4}$ to 1 inch.

The mixture should be sufficiently wet as is possible to use in an ordinary type of block machine, bearing in mind that the block must be removed from the mold immediately after manufacture, and it is therefore necessary to use a relatively dry mixture. A great many block manufacturers, however, fail to use as much water as the conditions of manufacture will permit.

It is the customary practice in the manufacture of blocks to use various kinds and types of ornamental facing. The mixture for this facing should be mixed in the proportion of one sack of Portland cement to 2 cubic feet of sand, obtaining the desired color and texture by the use of an aggregate of the proper size and color and treating the surface of the work so as to expose the aggregate.

The manufacture of concrete brick is similar in a great many particulars to the manufacture of concrete blocks. The proportions used, however, in the manufacture of brick should be one sack of Portland cement and not more than 3 cubic feet of clean, coarse sand, graded in size up to $\frac{1}{4}$ inch. When it is desired to face the brick with a richer material, one sack of Portland cement may be mixed with 2 cubic feet of sand, granite screenings or other desirable facing material. It has been in a great many places customary to mix the facing material somewhat drier than the mixture used for the body of the brick. This is a practice which is not to be recommended and where discovered means should be taken to rectify and discourage this method of procedure.

Coloring Concrete

In procuring various color effects for the facing of block and brick only mineral coloring should be

used and should in no case exceed 8 per cent of the cement with which it should be thoroly mixed before either aggregate or water is added. It is possible to procure desirable colors from a great many manufacturers that may safely be used. Various shades of red, yellow, blue and black may be produced but brilliant effects are impossible and tests have shown that it is almost an impossibility to obtain artificial colors that will not fade in time.

Making Cement Fence Posts

In manufacturing concrete fence posts it is not within the province of this article to enumerate and detail the various types now commercially possible, nor the arrangement and amount of reinforcing required. It has been found that a very satisfactory result can be obtained by the use of a proportion consisting of one sack of Portland cement, 2 cubic feet of clean, coarse sand, ranging from the finer particles to those of $\frac{3}{4}$ inch, 3 cubic feet of coarser aggregate, consisting of hard, durable, screened gravel, or broken stone, varying in size from $\frac{1}{4}$ to $\frac{3}{4}$ inch in largest dimension.

The required amount of water should be added to the mixture so that the posts can be cast in the molds and density of concrete secured by agitating the mold or puddling the concrete. The use of dry mixtures will not produce a satisfactory bond between the concrete and the reinforcing metal, nor does it develop the proper strength.

The proper consistency is obtained by using that amount of water which will cause the mixture to settle into every part of the mold or form by churning or puddling yet not so thin that water will collect on the surface. This consistency can be used with equal and satisfactory results in vertical and horizontal molds.

To secure a dense post with a smooth surface it is necessary that the air be forced out of the concrete.

When the posts are cast on end this can be very readily accomplished by raising and dropping the mold during the process of filling. Or, it may be sufficient to churn the concrete up and down with a stick or rod, at the same time tapping the sides of the mold as filling progresses.

Where the posts are cast on the side with the mold in a horizontal position, the mold should be shaken, jarred or rapped or a stick used to, scrape thru the concrete and along the inside surface of the mold so as to release the air bubbles. Either of these methods will produce a dense post with a smooth finish with minimum exposure of aggregate.

Concrete Drain Tile

In the manufacture of concrete drain tile and sewer pipe most wonderful advance has been made within the last few years by the manufacturers of the necessary equipment and machinery. They have given this subject long and careful study and have been eager to adopt suggestions and recommendations brought to their attention by the concrete pipe manufacturer, where such suggestions lead to a betterment in the manufacturing process.

The same general specifications apply to the materials used for concrete pipe and tile as have been enumerated heretofore. It is of prime importance that dense concrete be secured, and on this account a most careful investigation of the materials available should be made, determining their fitness for this work and the proportioning which will insure a product of uniform density and strength. Where coarse

aggregates are not used a mixture of one sack of Portland cement to 3 cubic feet of clean, coarse sand is recommended. If coarse aggregates are introduced they should be carefully examined to determine their fitness and proportions not exceeding one sack of Portland cement, 2 cubic feet of sand and 4 cubic feet of coarse aggregate be used, the size of the coarse aggregate being more or less determined by the diameter of the pipe and its thickness of shell.

The prime fundamental involved in the manufacture of ornamental concrete work is the question of molds. It would hardly be within the scope of this article to endeavor to dwell upon this subject, altho it is anticipated that at some time in the future an article will be prepared covering the many phases of ornamental concrete work, its use and manufacture.

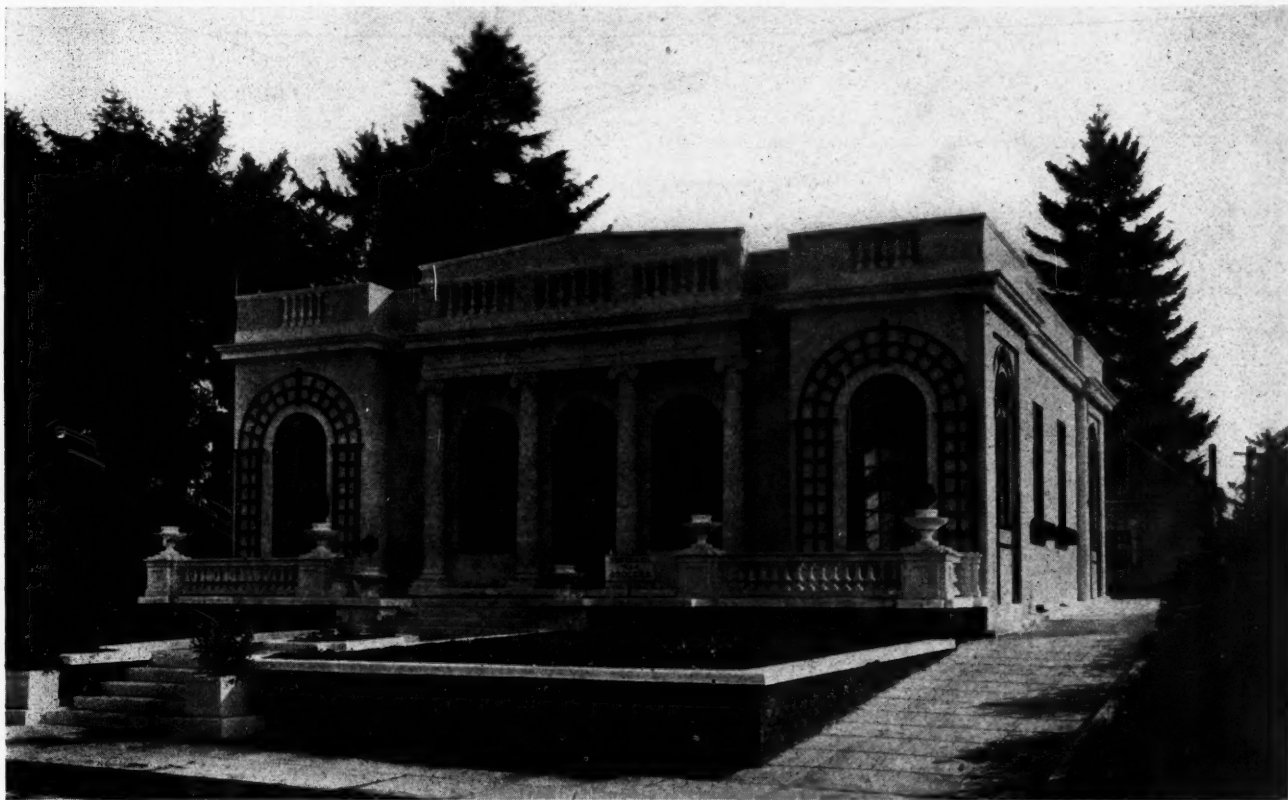


Advanced Style Store Building

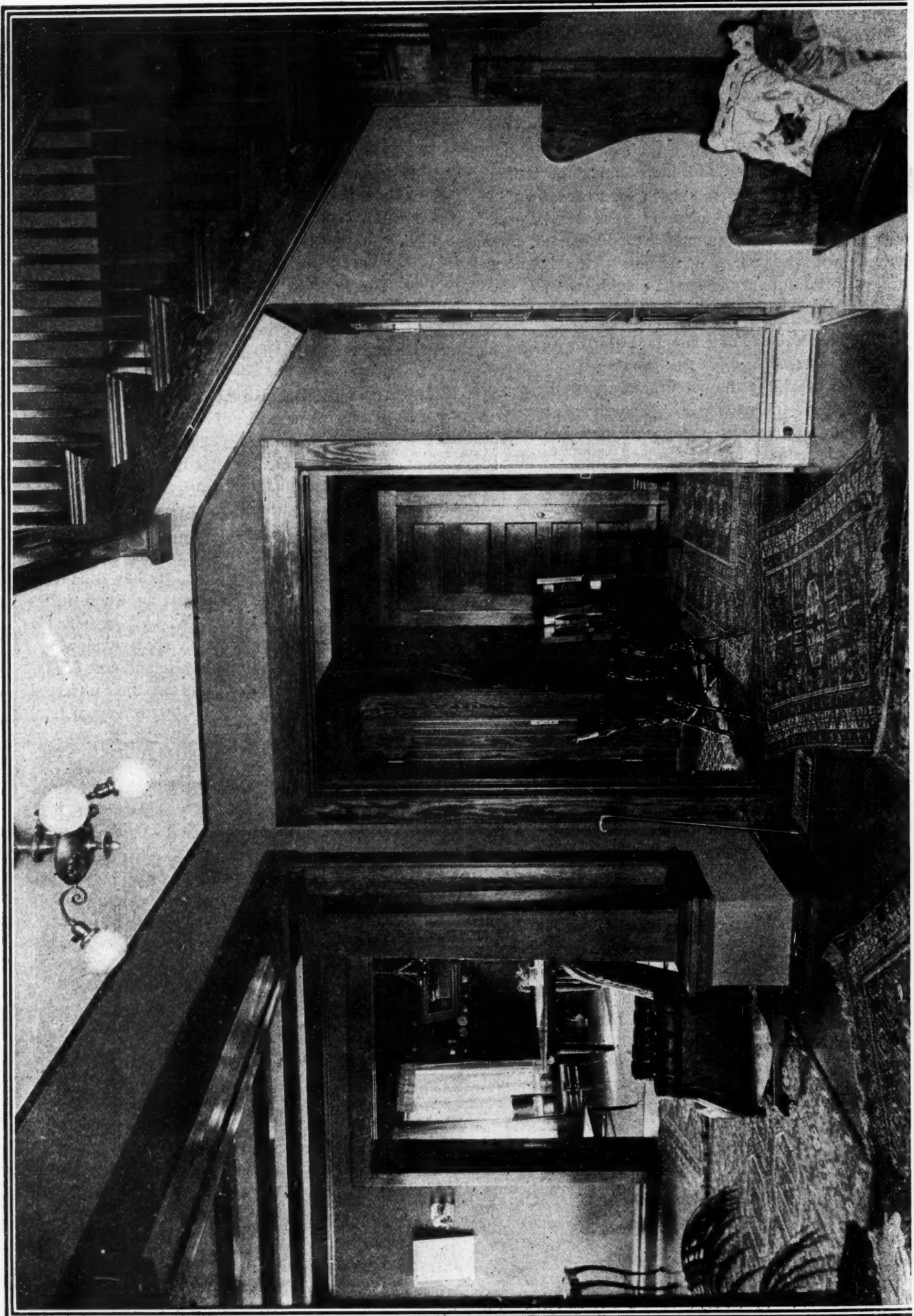
THE exclusive suburb of Irvington, a part of Portland, Oregon, boasts a unique grocery store building of cement, the architectural lines of which greatly resemble a modern bungalow. The building is extraordinarily attractive, and might easily be taken for a public library, a chapel, or a home. The design was adopted to harmonize with the attractive homes built in this section of the city, and its like as a retail business place perhaps does not exist anywhere in the country. The grocery is conducted by Smith & Co. There are no glaring signs or gaudy show windows.

The building is 42 by 45 feet in size and cost \$5,000. The owner, Mr. J. H. Tillman, was also the contractor.

MONROE WOOLLEY.



A Grocery Store of the Newest Style Makes One Think He Is Going To Church Instead of To Market. It Was Designed and Built by H. J. Tillman, Portland, Oregon. Size 42 by 45 Feet. Cost \$5,000.00.



RECEPTION HALL, STAIR AND CASED OPENING DETAILED PHOTOGRAPH.
Here Is An Inexpensive House Interior Handled With Fine Taste. The Trim Is Fine.

Popular Square Type House

The rectangular house cannot be beaten insofar as the convenient and economic arrangement of rooms is concerned. To some builders, the straight lines of a real rectangular house are not exactly in harmony with their ideas.

Design No. 6880 gets away from this straight and plain effect, but still retains the possibilities of interior arrangement in the rectangular house. The principal things which serve to break this straight line effect are the bays, one in front and one on the side of the house. The dormer window also helps in this respect.

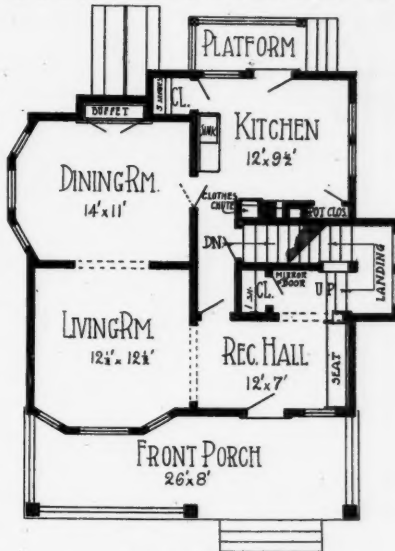
The upper half of the house is shingled. Weather boards can be used instead if it is desired, but the shingles are at present proving popular. The shingling looks well and together with the second floor windows having a six-light upper sash, the house has a very nice appearance from the outside.

The reception hall is designed in an original way which will be found

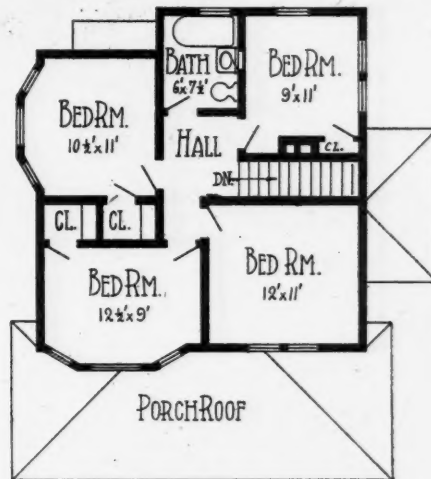
convenient. There is a seat built on one side of the hall which adds to artistic appearance. In the farther end of the hall there is a small recess separated from the hall by a cased doorway. On one side of the recess is a closet with a mirror door. From

the other side the stairs start to the second floor. The landing of this stairway is in a bay which has two windows; and this arrangement always looks attractive.

The dining room and living rooms are both good because of the large amount of light coming in from the bay windows in each of the rooms.



First Floor Plan.



Second Floor Plan.

Arrangement of House. Size 26 Feet by 27 Feet.



Modified rectangular house of 7 rooms. Size 26 feet by 27 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6880.



Two-Story Bungalow. Size, 26 feet by 38 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6879.

Two-Story Bungalow

All the things, which give the bungalow that cozy and homelike feeling, are included in Design No. 6879. The roofs of both the porches and house slope gently and have exposed rafters with braces for the eaves. These two things help much in giving a bungalow appearance to the house.

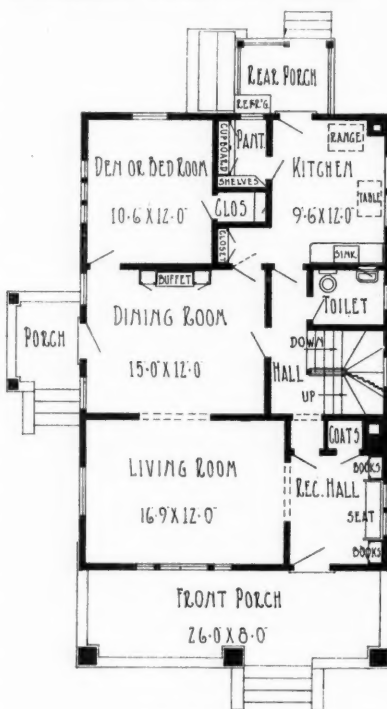
On entering the reception hall thru the front door the seat, with windows over it and book cases built on either side, immediately catches the eye in a pleasing manner. A closet in the back of this hall makes a nice place for coats and a halltree is unnecessary.

Both the dining and living rooms are large and light, a thing appreciated by all housebuilders. The den or bedroom, off from the dining room, can be used for a playroom, sewing room or both together, as well as the uses mentioned in the plans.

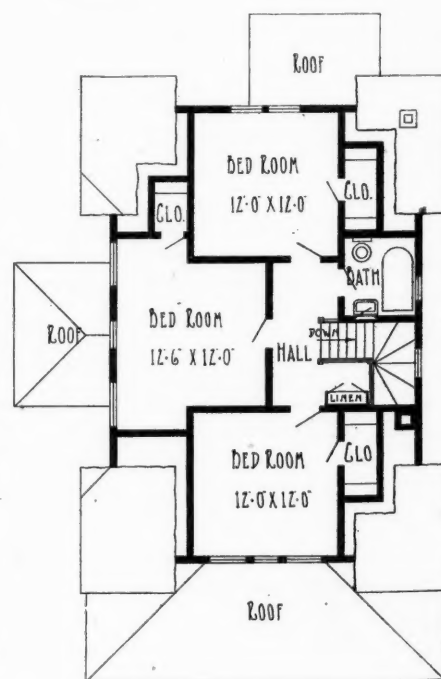
The kitchen and pantry are large and convenient, as called for by nearly all housewives, and the refrigerator is placed so that it can be filled from the outside. The hall, from which the stairs to the second floor begin, is centrally located and can be entered directly from the reception hall, diningroom or kitchen.

The second floor is well planned so that all the bedrooms are large and have commodious closets for clothes. The

front and side bedrooms have three windows and the back bedroom has two windows.

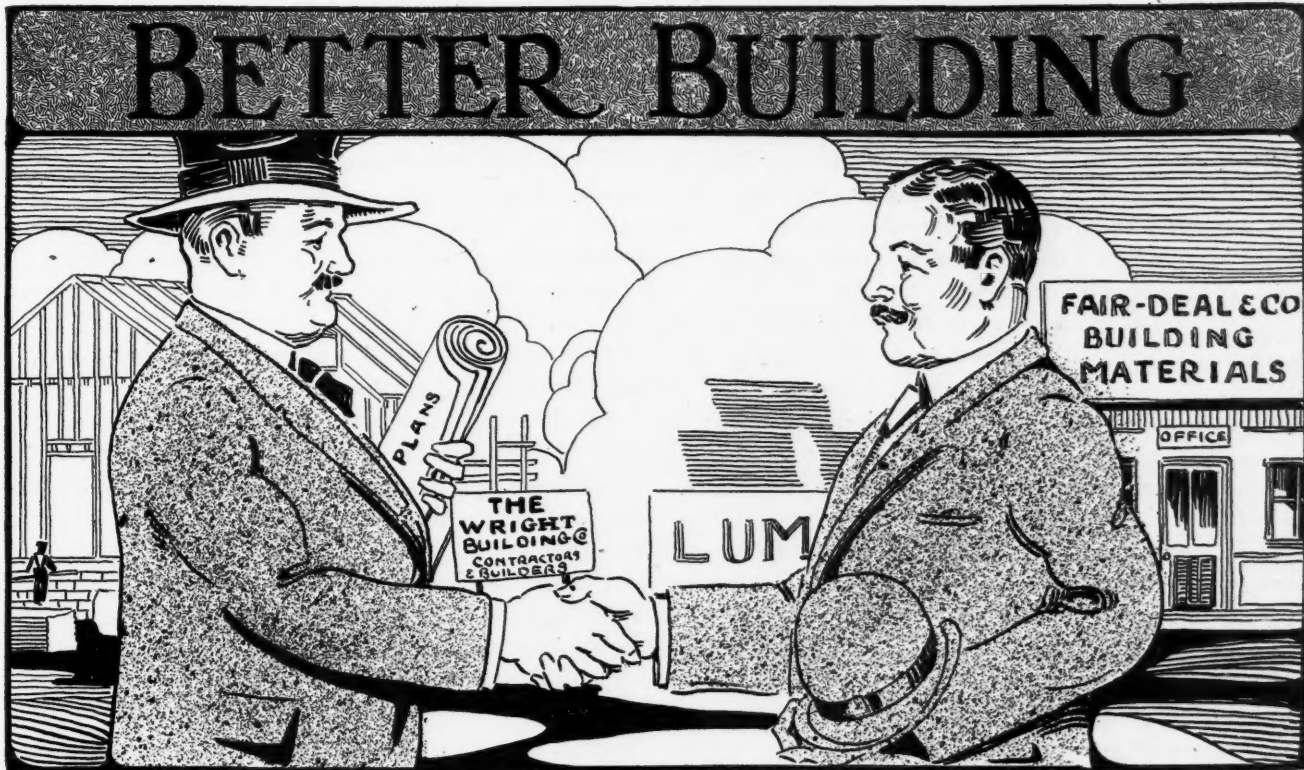


First Floor Plan.



Second Floor Plan.

Arrangement of House. Size 26 Feet by 38 Feet.



Dealer-Contractor Good-Will Best for Building

The Growth of the Building Club Idea

WE find so much interest in the subject of co-operation—in Builders' Clubs—in community building, that we are taking the liberty of printing an inquiry and reply made thereto. For obvious reasons we use fictitious name and address.

Every community has its own problems. But if there is only one in the community who has the initiative of the one who made the quoted inquiry, we feel sure, even so-called unsurmountable difficulties can be overcome.

It sometimes occurs that one who should be affiliated in the get-together movement cannot be reached by his local people. In that event we are more than pleased to write such, if all details are furnished us so we can do so intelligently and effectively.



"Sometown," Ind.

THE MAN FROM THE LUMBER YARD,
Care of THE AMERICAN BUILDER.

Your article on co-operation in the December issue of the AMERICAN BUILDER is the best we have read in any of our trade publications. We are interested in the Builders' Club idea, and would be glad to have your suggestions.

PERKINS LUMBER CO.,
John Perkins, Manager.

Answer:

There are so many things to be taken into account in the forming of a Builders' Club that it is more than possible that some important detail may be overlooked in a letter.

The fact of your having read my December article and written us within twenty-four hours of receipt of the magazine shows that you are alive to the situa-

tion and furthermore a live wire.

Because of the location of your town you should find a hearty sympathy with the movement on the part of all as they must realize the handicap under which "Sometown" is. Your two hardware people should be especially desirous of joining with the lumber interests.

I doubt very much your being able to interest the two department stores who are large factors in the hardware line, and it is an open question if it would be desirable to have them with you.

Assuming now that you have decided that a "Builders' Club" is worth while, let me give you a thought to hold in mind as you proceed. It is this, viz:

"I am but one, but I am one. I cannot do everything but I can do something. What I can do, I will do." Do not be surprised or hurt if someone intimates that you are trying to put something over.

I consider it best to state frankly that your interest is from your expectation of making more money because of the association.

It is a sad but true commentary on the age that any idealism begets suspicion.

It is probable that all whom you approach know of the Cranberry Association which is carrying on an extensive and expensive advertising campaign to increase the consumption of cranberries. Everyone is acquainted with the organization of the California Fruit Growers Association and the co-operative work it is doing on behalf of its members.

I know of a number of associations of competing manufacturers in the building field who pool their

funds in promoting the interest of all the members.

First, make up a list of every one in "Somtown" that should be interested in Bigger, Better building. Have several copies run off on the typewriter.

Remembering that one alone cannot constitute a Builders' Club, you call on the dealer or contractor that you think is most likely to be in sympathy with your ideas. After you two are of one mind you see the third, either together or singly.

On general principles two who are in harmony can accomplish more with a "pull back" dealer than one alone.

When you have four or five lined up by personal calls you are in position to quickly reach the remainder, each of whom will respond to the request of some one of your co-workers.

It is very desirable to have practically a perfect attendance at the first meeting. This meeting can be held in the office of any member.

It is more than likely that you can secure the use of the board of directors' room of your banker. All the banks in "Somtown" should be in sympathy and co-operate with you.

If you can hold your meeting in a bank it will add

prestige and remove any feeling of restraint that might be present if you were not on strictly neutral ground.

Right here is where you must use a great deal of politics as to your temporary chairman.

Some folks are a little touchy if not properly recognized. Yet it would be unfortunate to have a man as the head of an organization if his past history indicated a lack of consideration of the interests of others.

But he must be a man that will not let the Club go to sleep.

"Work and Results" will be the essence of your constitution and by-laws.

Briefly stated your program will be the gathering of data on possible builders, encouraging the erection of better buildings, arousing community pride and working out plans for a greater harmony in building designs.

It will not take much of the "home-owning spirit" to change many who now seem only interested in their automobile to become interested in that better thing which is next to Heaven, viz a HOME.

Don't hesitate to write me again if further data is desired.

Sincerely yours,

THE MAN FROM THE LUMBER YARD.

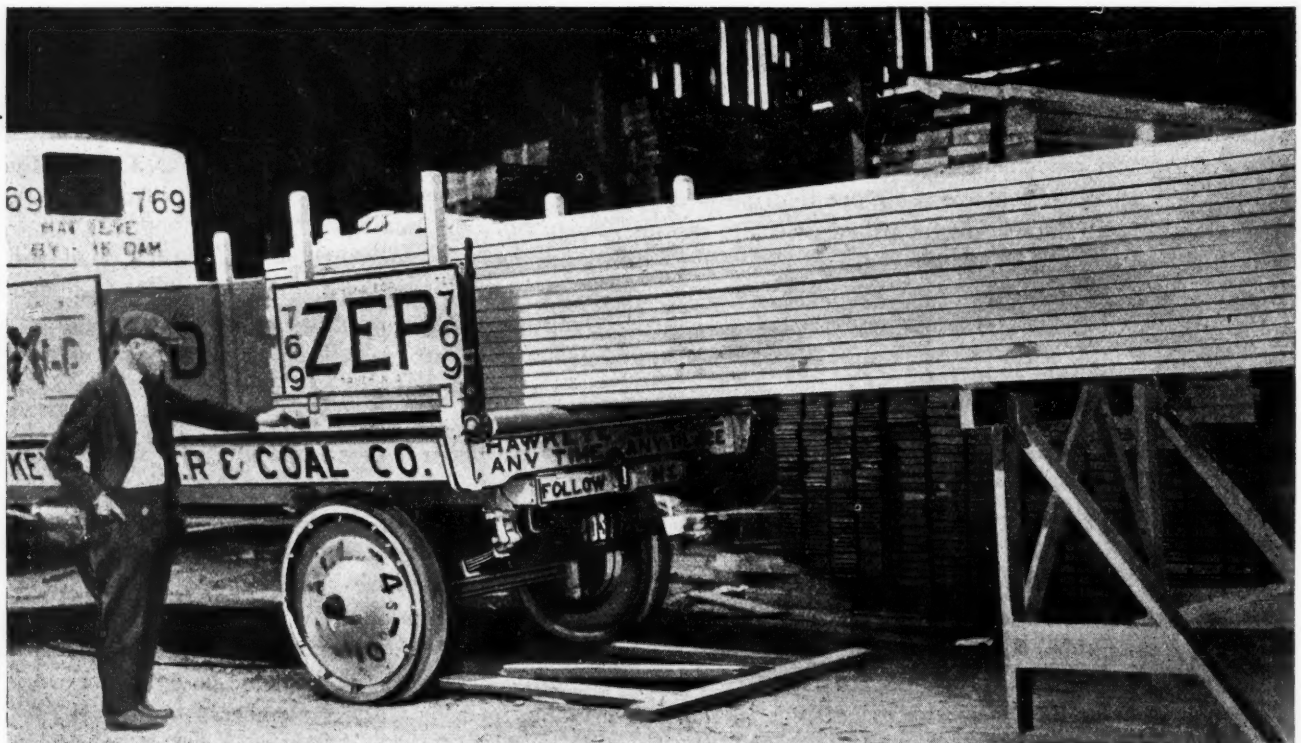
Loading and Unloading in 50 Seconds

HOW ONE BUILDERS' SUPPLY FIRM GIVES SERVICE AND HOLDS DOWN COSTS

THE Hawkeye Lumber Company of Cedar Rapids, Iowa, has solved its haulage problem in a way that should interest the entire trade. This concern has done away with all delay and difficulty in handling its deliveries and at the same time has materially lessened the cost. And all thru the purchase of

a sturdy motor truck with power on all four wheels equipped with a special quick-roll body.

This particular body is built to load and unload any goods which may be put on rollers with surprising dispatch. It is, however, especially adapted to the lumber business. As its name implies, it is equipped



Labor-Saving Stunt for Loading Lumber. The Truck Has Knocked Down the First Trestle Brace and the Load is Sliding Easily Over the Rollers While the Truck Continues to Back Up.

with rollers which support the load on the truck bed.

The tail end of the body is equipped with a stout roller supported by two cast steel bearings. The roller is operated by a hand lever and a double acting pawl working in a ratchet keyed to the end of the roller. By simply manipulating this handle one man can unload several tons of lumber in as little as 50 seconds time.

Loading lumber onto the truck is equally as easy. While the truck is out with one load, the men in the yard pile the next load on a pair of trestle-trees built about an inch higher than the body of the truck. The latter on its return simply backs under, knocks the first support from underneath and the load slides over the rollers and is locked securely on the truck by the double-acting pawl.

The truck itself delivers maximum loads "on the site." It is able to leave the beaten track and go over fields and other places impossible to most trucks. Locking differentials prevent any of its wheels from spinning. If two wheels can't get traction all the power of the motor is automatically switched to the other two. If one wheel front or rear only is able to get a foothold, the truck keeps on going.



Trade Marked Lumber Increased His Business

By Harry T. Kendall

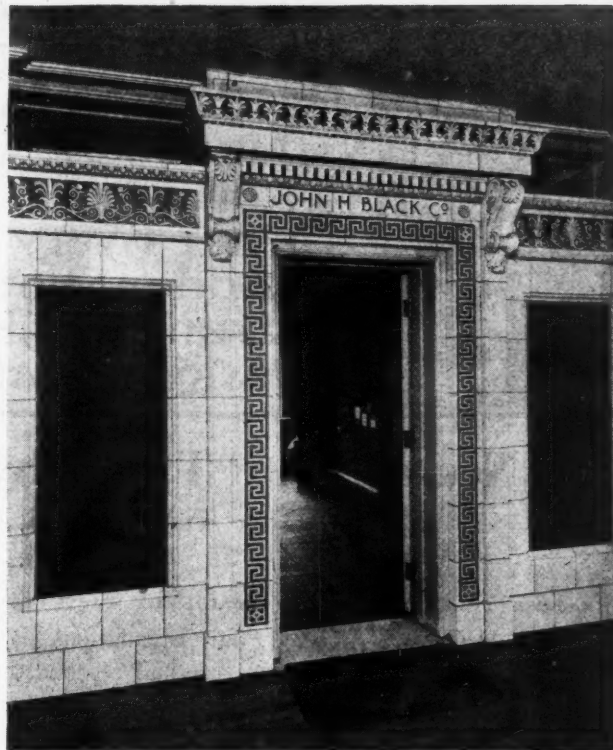
General Sales Agent, Kirby-Bonner Lumber Co.

THE advent of the trade marking of lumber is something new in a great industry. The lumber manufacturer and distributor have finally appreciated that the quality of lumber must be guaranteed to the consumer. The old method of giving the consumer all classes of stock with no guarantee on the part of the manufacturer as to its quality, has been responsible for at least a part of the decreasing consumption of wood.

Every other commodity that goes into the construction of a building bears the maker's name or trade mark. In case of a failure the producer is expected to make good. As it is necessary for the retailer to purchase lumber from a great number of manufacturers it is impossible for him to carry a complete assortment of any one particular private brand. Thru the medium of the Southern Pine Association however the lumber manufacturers are endeavoring to establish a trade in a guaranteed commodity and the retailers' market is not restricted because the mills using the brand of the Association have a producing capacity of six billion feet per annum.

Whether the branding and guaranteeing of lumber is to become a success rests ultimately with the consumer. If he wants his lumber of known quality and value the same as he wants every other article he purchases, he will insist on branded lumber.

Some extensive experiments have been made. To my knowledge for over a year one retail yard has been selling nothing but stock carrying the brand of a well



Building Material Dealers Recognize the Sales Value of Office Displays of Lumber, Millwork, Brick, Cement, Terra Cotta, etc. Some of These Are Quite Elaborate, Yet They Do Not Have to Be So Expensively Elaborate as This Architectural Terra Cotta Display in the Office of a Prominent Buffalo Dealer.

known manufacturer. At first his trade paid very little attention to the brand, but as he continued to handle it he was surprised to find that his trade not only began to demand lumber of this particular brand, but found that other customers were attracted to him, so his business materially increased because of the uniformness of his stock and the knowledge on the part of the customer that the manufacturer was willing to join the retailer in the guaranteeing of the material.

Consider for the moment not only other kinds of building material, but other lines of merchandise. If you buy a shirt or a collar or a suit of clothes, if you purchase a sack of flour, a can of syrup or a dozen oranges, and your choice is between a well known brand and a nondescript for the same money, you will purchase the trade marked article.

The lumber dealer does not expect that the trade marking of his product will secure for him an extra price as against his competitor, but he does believe that if the wood consumer knows that the manufacturer has enough faith in his product to brand it with his name, and guarantee it to be of a certain standard grade, that the purchaser will have more faith in wood and not turn to other substitutes as he has been prone to do in the past when wood has proven unsatisfactory. How many architects, contractors and carpenters have desired to specify on their requirements that the quality of lumber shall be the same as the last, and then discover that even tho the retailer was exceedingly anxious to please them, it was impossible to deliver a similar quality?



Noon Hour Talks by the Boss Carpenter

Talk No. 56. Factory Design

New Series No. 13

THE BOSS TELLS ABOUT THE DESIGN OF CAST IRON COLUMNS OR POSTS FOR A SMALL FACTORY BUILDING

WHEN we finished our calculations last time," said the Boss, "we had reached the design of the posts or columns for our building. This time we will find the size of these members using hollow cast iron columns thruout the building. It would be possible to consider an alternate design using brick piers laid up in cement mortar for the basement members only. You will remember that we used square timber posts in all parts of the factory which we designed previous to this problem.

"As we have explained before, the floor loads are carried by the flooring to the beams, and then by the

beams to the girders, or possibly direct by the flooring to the girders. The girders in turn carry a part of the loads

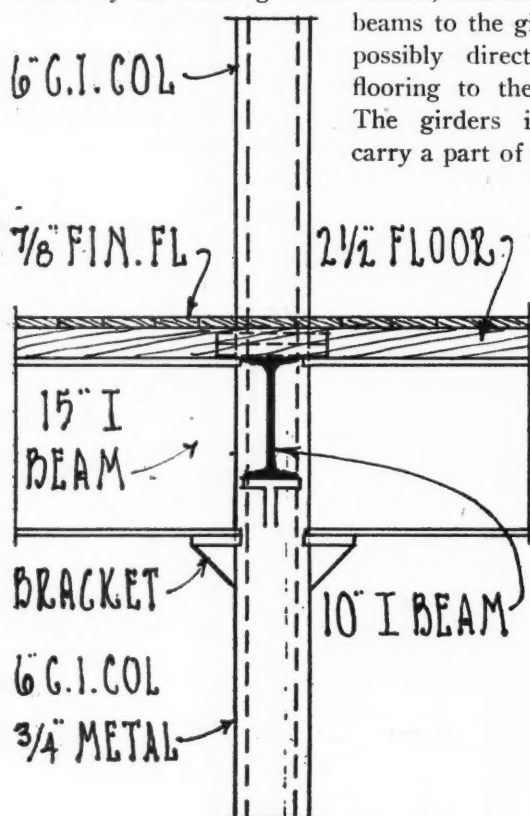


Fig. 13A. Methods of Supporting Steel Beams and Girdles at Column.

to the posts or columns and another part to the side walls. The posts and walls finally carry the loads to the foundation.

"Columns are divided into two classes, according to the ratio between the length of the member and its least side dimension. If the length is greater than from 10 to 15 times the least side dimension, the column is called a "long column" and is designed according to a special formula to be given later. If the length is less than from 10 to 15 times the least side dimension, the member is called a "short column" and is designed as a plain compression member. In all of the cases treated in our problem we will assume that the line of action of the load is directly downward thru the center of the supporting member.

"In handbooks treating on column design you will often find the term 'flat end' or 'square end' column used. This means that the ends of the member are squared off or turned off flat and true so that they rest squarely on another flat surface both at the top and bottom. All parts of these surfaces should bear evenly so as to distribute the load over all parts of the ends and have the resultant pressure act exactly at the center of the cross-section of the member.

"Many formulas for the design of posts and columns have been used. Some of these are based entirely on theoretical principles; others on the results of actual tests, and a few on a combination of theory and practice. The majority of these formulas agree fairly well when applied to actual design, but those based at least in part upon experiment seem to give the most dependable results.

"The Rankine formula is well adapted to the design of cast iron columns and will be used in our calculations. It is as follows:

$$P = \frac{F_c}{1 + B \frac{L^2}{k^2}}$$

Where P is the central load on the column in pounds, F is the area of the cross-section of the column in square inches, c is a working value of the compressive strength of the material used for the column, B is a constant which has a value of $1/6400$ for cast iron, L is the length of the column between supports in inches, and k^2 is obtained by dividing the least value of I (moment of inertia) of the cross-section by F .

"The following table will give values of k^2 , I , and F for common shapes of cross-section.

Shape of Section	Least Moment of Inertia	Area of Section	k^2
Square.....	$\frac{d^4}{12}$	d^2	$\frac{d^2}{12}$
Rectangular..	$\frac{hd^3}{12}$	hd	$\frac{d^2}{12}$
Hollow Square....	$\frac{d^4 - d_1^4}{12}$	$d^2 - d_1^2$	$\frac{d^2 + d_1^2}{12}$
Solid Circle..	$\frac{3.14 d^4}{64}$	$3.14 d^2$	$\frac{d^2}{16}$
Hollow Circle	$\frac{3.14 (d^4 - d_1^4)}{64}$	$3.14 (d^2 - d_1^2)$	$\frac{d^2 + d_1^2}{16}$

"In the table above, d is the outside dimension of the cross-section (the least one in the case of a rectangle), d_1 is the corresponding inside dimension in a hollow section, and h is the remaining dimension in the case of a solid rectangle.

"The value of c for cast iron may be taken as 10,000 pounds per square inch working, based on 80,000 pounds per square inch ultimate strength with a factor of safety of 8.

"First, we will find the sign of the columns in the top story. These carry the loads from the roof, each

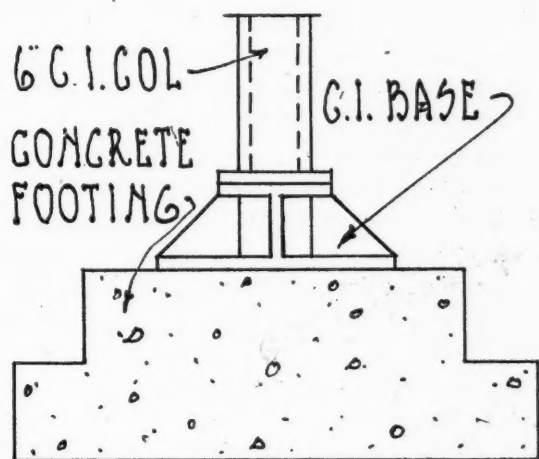


Fig. 13B. Base Plate for Column at Supporting Pier.

column supporting the ends of the girders on either side of the column cap and also two floor beams as shown in Fig. 12A of Talk No. 55. The loads coming from each end of the two girders will be one-half of 5,440 pounds as found in our last talk. Likewise each end of the two intermediate beams which meet at the cap will bring one-half of 5,440 pounds to the column. The total central load on the column will be $4 \times \frac{1}{2} \times 5,440 = 10,880$ pounds.

"Placing this value of P in Rankine's formula given above and assuming that our column will be of hollow circular shape with metal $\frac{3}{4}$ inch thick and with a length of 12 feet for the top story, we have

$$P = \frac{F c}{1 + B \frac{L^2}{k^2}}$$

or,

$$10,880 = \frac{3.14 \frac{d^2 - d_1^2}{4} \times 10,000}{1 + \frac{1}{6,400} \times \frac{(12 \times 12)^2}{\frac{d^2 + d_1^2}{16}}}$$

The values for F and k^2 are taken from the table above, while 12×12 is the length of the column in inches.

"It is probable that this equation may be solved the easiest by assuming an outside diameter of column, and knowing the thickness, see if the right hand side of the equation is equal to or greater than the left hand side. If a 6-inch diameter column is the smallest that we wish to use in the building, it is advisable to try that dimension first for these light roof loads. If the 6-inch column is not large enough, then try 7 inches or 8 inches until the proper size is found. If you are not trained in higher mathematics this will both save your time and give you a solution of your problem.

"We will try 6 inches as the outside diameter d in the equation above, thus making d_1 equal to $(6 - 2 \times \frac{3}{4}) = 4\frac{1}{2}$ inches. The right side of the equation when filled in will be as follows:

$$\frac{3.14 \frac{6^2 - 4\frac{1}{2}^2}{4} \times 10,000}{1 + \frac{1}{6,400} \times \frac{(12 \times 12)^2}{\frac{6^2 + 4\frac{1}{2}^2}{16}}}$$

Multiplying and reducing, we have

$$\frac{12.3 \times 10,000}{1 + .92} \text{ or, } 64,050 \text{ pounds}$$

Since this answer is so much larger than the load of

(Continued to page 126.)

How it is that Hydrated Lime can both Sound Deaden and Waterproof?

By Norman G. Hough
Manager Hydrated Lime Bureau

QUESTION—If hydrated lime plaster, when used for scratch and brown coat plastering, is a sound deadening plaster because it contains many small pores, how can you explain that hydrated lime is a waterproofing material when it is used in Portland cement concrete?

This question was asked us recently by a contractor who has had many years of building experience. The question was answered very satisfactorily to the inquirer, but it brings up the point that perhaps many builders are laboring under the impression that because hydrated lime plaster is porous and a sound deadener, it cannot be a successful waterproofing material. We therefore desire to make the following explanation for the benefit of those of your readers who are interested in the subject.

Hydrated lime plaster is a nonconductor of sound when used for scratch and brown coat interior plastering, due to the fact that it becomes porous during the hardening process. Hydrated lime plaster, like any other plaster, is prepared for application to the wall by mixing thoroly with sand and water. The mixing water when the plaster is applied to the wall, occupies some of the space between the lath and the face of the ground strips, which to all appearances is completely filled with plaster. The water used in mixing the plaster after having been applied to the wall, however, is lost, due to absorption by the backing material upon which it is placed (such as wood lath or brick or tile). The atmosphere is also absorbing a large portion of water from the plaster. Between these two absorbing agents, all of the mixing water is taken from the plaster in the drying process, and the space in the plaster originally occupied by the water becomes air space. Acoustical experts are agreed that a plaster containing many fine pores is a better nonconductor of sound than a hard, solid plaster, and it is these millions of tiny dead air cells that make hydrated lime plaster a highly effective nonconductor of sound.

The principle, however, upon which hydrated lime acts as a waterproofing agent in concrete is entirely different. In proportioning concrete there is used stone, sand, cement and hydrated lime. An ideal concrete mixture would contain no voids. This can be accomplished best by having just sufficient sand to fill the voids in the stone content and have just sufficient cement and hydrated lime to fill the voids in the sand and in each other. Since the grains of hydrate and cement differ in size, it is evident that a mixture of these two materials will contain less voids than either one alone. According to this method of proportioning and also figuring Portland cement as having a specific gravity of 3.1, which is required in order to pass the specifications of the American Society for Testing

Materials, a cubic yard of 1:2:4 concrete containing six bags of cement would have 3 cubic feet of voids in the cement to be filled with hydrated lime. This would theoretically require the addition of 120 pounds of hydrated lime per yard of concrete. However, hydrated lime exerts a mechanical influence over the concrete which results in a uniform, dense, watertight concrete in the hardened form. In every section of the country it is customary for a bricklayer to want lime mixed in the brick mortar to make it work easier under the trowel. The lime limbers up the mortar and makes it easy to work. Apply this same principle to concrete and what is the result? The concrete becomes more plastic and easy to work in the forms. This plasticity causes the concrete to become very densely compacted, thus closing the voids which might not originally be filled with any material. Impermeability of concrete is in direct proportion to the density, thus by filling some of the voids with hydrated lime and by otherwise closing remaining voids (by having a concrete plastic enough to become more densely compacted) the concrete is made watertight. This mechanical effect is so noticeable that it is possible to obtain a dense, impermeable concrete by the addition of only 60 pounds of hydrated lime per yard, instead of 120 pounds theoretically required. Sixty pounds per yard is equivalent to 10 per cent of hydrate by weight of the cement, which is the quantity recommended.



Wardrobe Closets

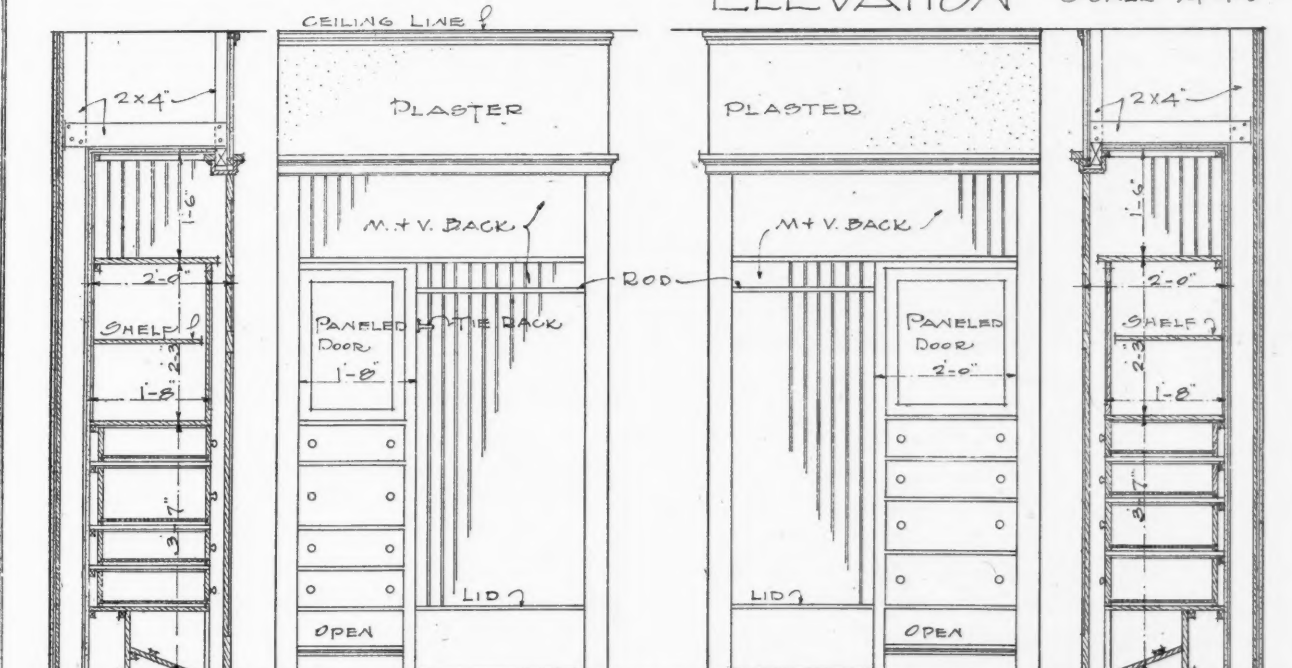
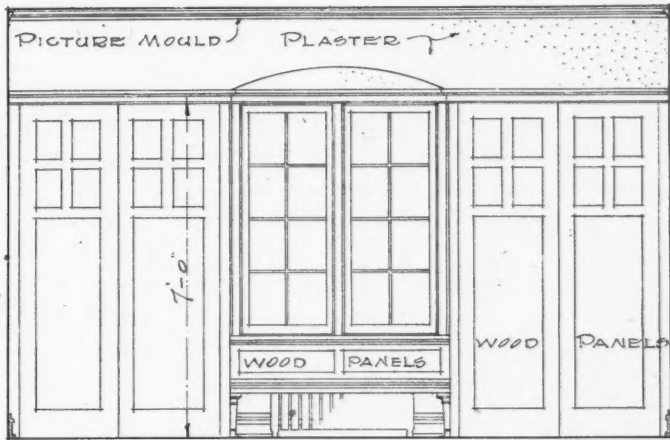
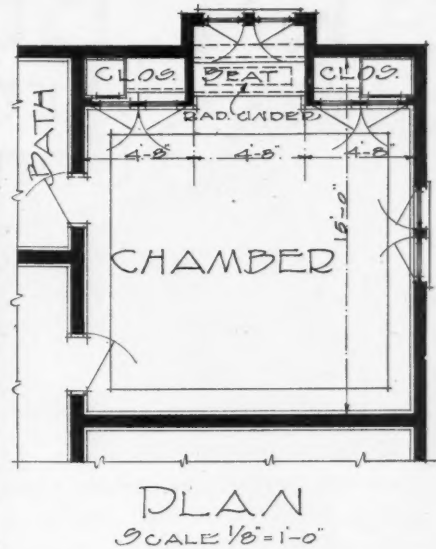
Designed by Ralph W. Emerling, Architect

PEOPLE are getting to appreciate more and more the advantages of well designed details of a home. Convenience can be provided for with a little thought beforehand. The ordinary closet with shelves, a few hooks and much blank wall space is hardly economical of room. A closet planned much as one would plan a chiffonier or dresser will get more in it and keep it in a more orderly fashion than the ordinary vacant space with a door in front to constitute a closet. It is also dustproof.

The wardrobe closets presented here might be used by any two persons occupying the same room, and with modifications to suit the individual be slightly changed. They are placed at the sides of a window which has a convenient seat. One side of each closet is open and fitted with a rod for coat hooks. Clothes hung thus are more get-at-able and more often can be put within a given space than if hung on hooks on the walls. The bottom can be used for a shoe box with a lid at the top or open with a cleat for a heel catch. There are several drawers for shirts and clothing and a shelf at the top. The paneled door encloses a space that can be fitted with drawers or left open for hat boxes; or the hats may be left on the shelves safe from dust and easy of access. The doors enclosing the whole front of the wardrobe can be made an attractive architectural feature of the room.



PERSPECTIVE



SECTION • INTERIOR VIEWS • OF CLOSETS • SECTION

WARDROBE CLOSETS

FARM BUILDINGS

Arranged For Convenience -



Small Barn Adaptability

Three Floor Plans with the Same Exterior

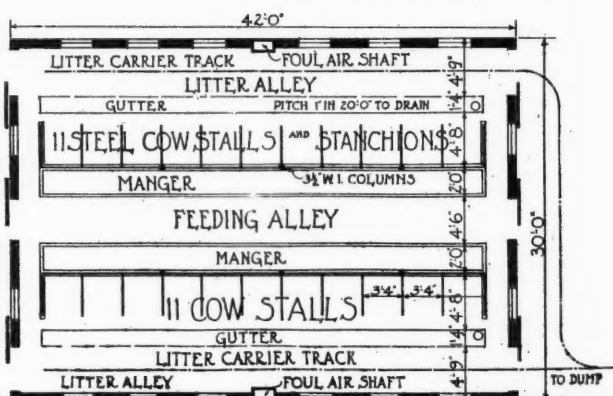
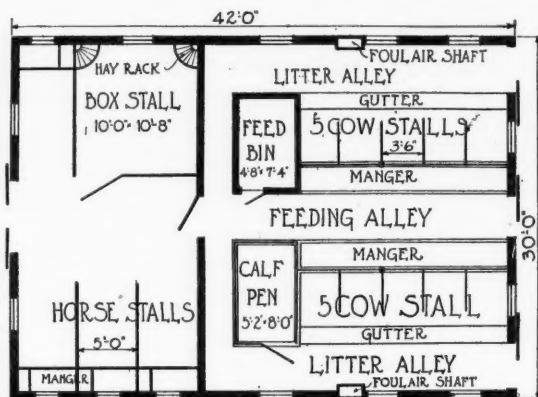
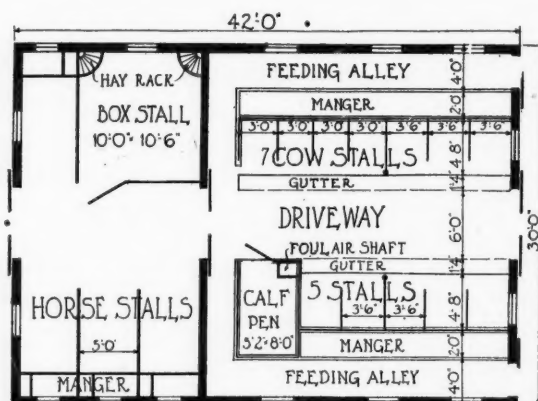
THE barn which is to be considered here is a building 42 feet by 30 feet. This is a popular size for the average farm and is often used for special purposes on the larger farms. It is a structure which is adaptable to almost any use within the limits of its size. It is constructed in accordance with the latest practice in farm building design and is intended to be equipped with the latest types of permanent equipment.

Foundation walls and floor are constructed of concrete, the walls being carried above grade a sufficient distance to protect the wood sills from moisture. Mangers and gutters are formed in the concrete floor for the cow stalls. Stall fixtures are securely anchored in the concrete.

Framing follows the plank frame construction type, no lumber being used which is greater than 2 inches in thickness. The advantages of this type of construction are generally recognized, altho in some sections the heavy timber type barn is retained either because of custom, abundance of heavy timber or lack of interest in the saving and structural betterment brought about by the adoption of the plank frame idea. The strongest argument among builders seems to be the ease of obtaining the lumber for plank frame barns, even from the regular stock of the smaller lumber yards. This argument is also an effective one for the builder to use in forming popular opinion among his clients. The strength of the trussed rafter roof and the maximum clear hay mow volume which it provides can also be used as convincing arguments. Since the builder is not required to handle heavy timbers in its construction, the plank frame barn is comparatively easy to erect.

The important features, lighting and ventilation, are given special attention. Large nine-light windows are used in the cow stables, box stalls and in the ends of the barn. A four-light window is placed in each of the single horse stalls. A sufficient number of windows are used so that every corner of the barn is flooded with light during the daytime. This feature has the double advantage that it utilizes, by direct ap-

plication, one of Nature's strongest forces in maintaining healthful conditions for the live stock housed within and it also enables the owner to easily do his



Three Different Floor Plans for Barn Shown on Opposite Page. The Designs Are, from Top to Bottom, A360a, A360b and A360c.

part in maintaining such conditions, because it exposes all collections of germ-carrying dirt which are likely to accumulate.

Convenience is carefully considered in modern barn design. The farmer, like all others who have a certain amount of what might be called "routine work" to perform, is ready and willing to be shown how he may cut down the time required to perform this work. The interior arrangement of his barns may be considered as one of the most important factors in bring-

is a third detail which must be carefully considered.

The illustration on the opposite page shows three floor plans which might be used in this barn. The exterior view shown on this page corresponds exactly to the upper two of the plans shown, and by changing the four-light windows to nine-light windows, changing the double door in the end to a single door and adding a single door on the outside of each of the lower windows, the perspective view will correspond to the bottom plan. The upper two plans provide a



Exterior View Common in Its Principal Points to Each of the Three Arrangements Shown on Opposite Page. We Can Furnish Blueprints and Typewritten Specifications for Any of the Three Plans for Only \$7.00 Per Set.

ing about the desired result. The arrangement is determined by the use to which the structure is to be put. There are a few general details which must be considered in any case.

If possible the barn should be accessible from any direction. Doors should be placed at both ends of every passageway which is used at any time for carrying materials into and out of the barn. Doors should, however, be carefully constructed and hung, or the advantage of the larger number will be lost in the trouble which they give. Facilities for feeding stock should be carefully considered since this is one means of saving a great deal of time. The removal of litter

combination horse and cow barn. The horse stables are similar, but the cow stables differ on these two plans. In the upper plan, 12 cows are accommodated, facing out. In the lower plan, 10 cows are accommodated, facing in. A feed bin in the second plan takes the place of two cow stalls. The different placing of the cows necessitates a difference in the ventilating ducts. Fresh air should be delivered to the front of the stalls and foul air drawn from the rear of the stalls. In the first plan, therefore, a single large shaft is placed adjacent to the center driveway and in the second plan two shafts are provided, one in each side wall. These ducts lead up to the ventilator.



Photographic Perspective of Large General Barn Built from Plans Furnished the Vaudreuil Lumber Company of Chippewa Falls, Wis., by Our Architectural Department. (Design A370.)

Special Large Combination Barn Design

THE large barn shown in the above illustration is a special design which was drawn up for the Vaudreuil Lumber Company of Chippewa Falls, Wisconsin, by the architectural department of AMERICAN BUILDER. This barn was erected of materials fur-

nished by the Vaudreuil Lumber Company and the special plans furnished by the Radford Architectural Company are an evidence of the service which the AMERICAN BUILDER is extending to lumber dealers all over the country.

The interior views of this barn show clearly how



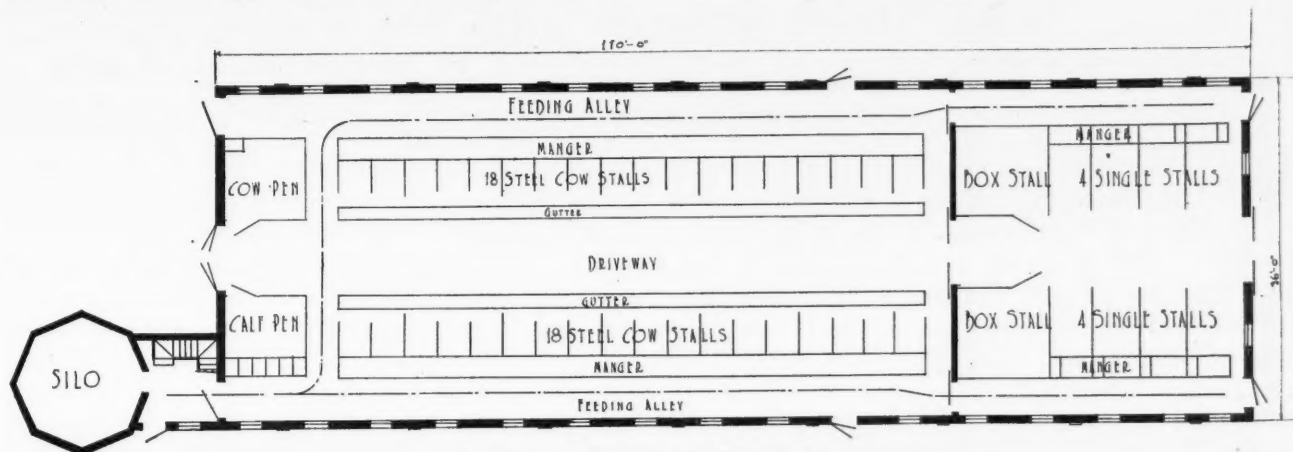
This Interior View Shows One of the Feeding Alleys of the Vaudreuil Lumber Company's Barn. Notice Concrete Manger, Modern Stall Equipment and General Bright and Business-Like Appearance.

light and airy the cow stable is. Plenty of windows are provided and ventilation is adequately taken care of. The fresh air intakes are shown in line with the bottom of windows in the exterior view of the barn and the interior views show where the fresh air is delivered near the ceiling in the outer walls. This gives the cows a continuous supply of fresh air. Notice that the cows face out and that the fresh air reaches them before it has time to become polluted.

Steel stanchions and partitions are used, giving the cow stable a neat appearance and offering no obstruc-

tion to proper ventilation. This stable, with its concrete floor and sanitary equipment, may be kept in excellent condition with comparatively little work. There are no dark corners to collect dirt.

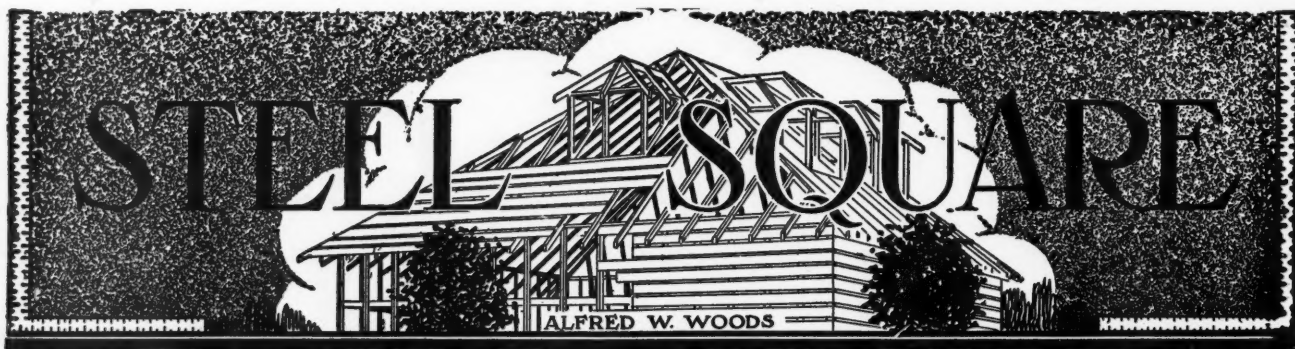
The service which AMERICAN BUILDER offers to lumber dealers is intended to stimulate farm building construction. It places in the hands of the dealer means of obtaining correct designs for farm buildings and enables him to extend useful service to his customers. Where the lumber dealers and the local contractors and builders work together much building business can be developed.



Floor Plan of General Barn Design No. A320.



View Showing Central Driveway in Cow Stable of Vaudreuil Lumber Company Barn.



The Steel Square and Its Use

ILLUSTRATING A SIMPLE METHOD FOR FINDING THE LENGTHS AND CUTS OF RAFTERS BY DIRECT APPLICATION OF THE STEEL SQUARE TO THE TIMBER

By A. W. Woods

WE have been requested to give a simple method for framing rafters such as the novice may use in the framing of the rafters for a cow barn, a chicken house or wood shed; in fact, something that anybody can use, whether they have had previous experience or not in the art of roof-framing. But in doing this, we cannot make any distinction as to what the building is to be used for, as the same principle applies to all buildings of like angles.

The illustrations show the stepping or running of

the steel square method, generally used by carpenters and which we hope is sufficiently clear to be readily understood, even by one without experience.

The first two illustrations show the proper measuring points under different conditions. The first shows the measuring, or gauge line, taken on a line on the side of the rafter, the same intersecting the edge of the plate, when set in position and is usually made to represent the lower edge of the projection of the rafter, which is generally known as the tail of the rafter. But the usual way is to select a straight timber for a pat-

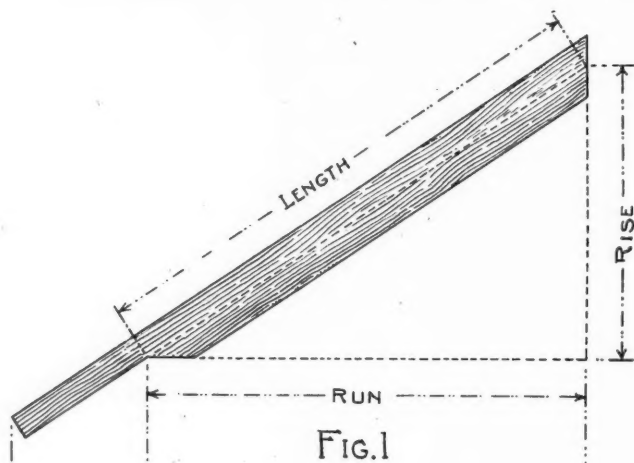


FIG. 1.

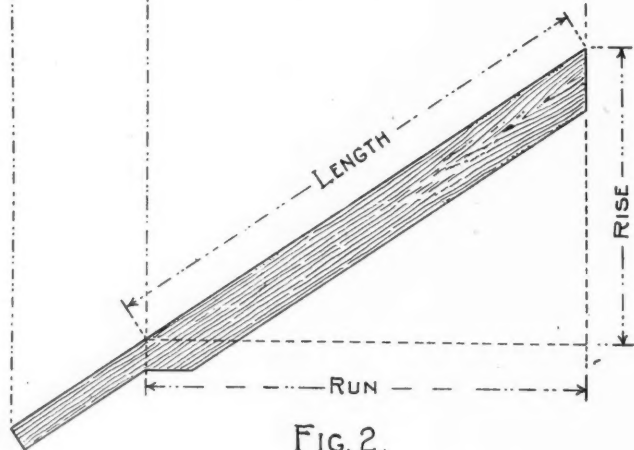


FIG. 2.

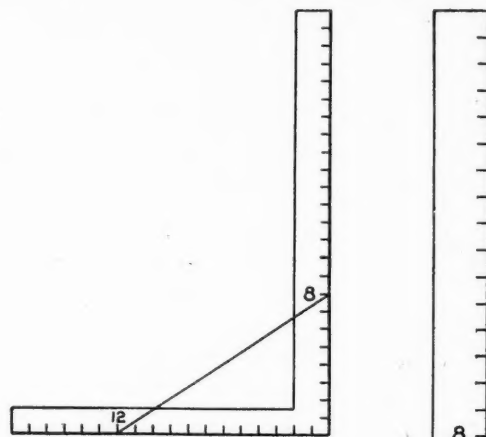


FIG. 3.

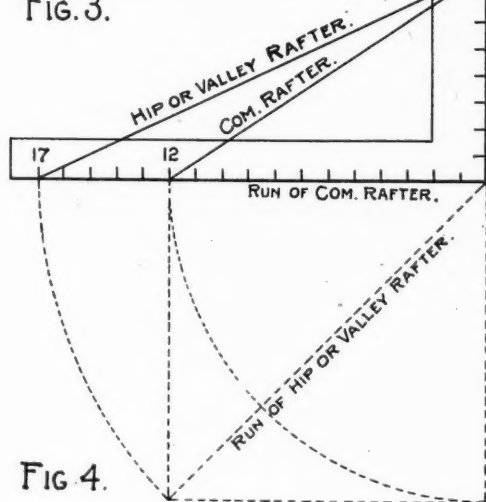


FIG. 4.

The Steel Square as Applied to the Framing of Rafters.

tern and use the upper edge of same for the gauge line, as shown in the second illustration. The dimension lines in either case clearly show the proper points of measure for the run, rise and length of the rafter.

In the third illustration is shown the run, rise and length of pitch per foot run of the common rafter, for a rise of 8 inches per foot run and the figures shown give the seat and plumb cut for same, while the fourth illustration shows the addition of the corresponding hip or valley and how it is determined.

The fifth illustration shows the application of the square to the timber for finding the length and cuts for the common rafter with a total run of four feet and 3 inches. In the illustration the rafter is set in the position it would appear in the roof, as in this way it more clearly defines the application of the square, which in this case is applied four times and by marking along the tongue at the last placing and then sliding the square over, the extra length of the rafter for the 3 inches in the run, will be cared for without any further measurement to determine the length of the rafter. Thus, it will be seen, the length of the rafter has been found by this operation, without knowing just what it is, neither is it essential that it should be known, as the operation solves that part of the problem, but it is essential that the operation be performed accurately, as any deviation is multiplied twelve fold.

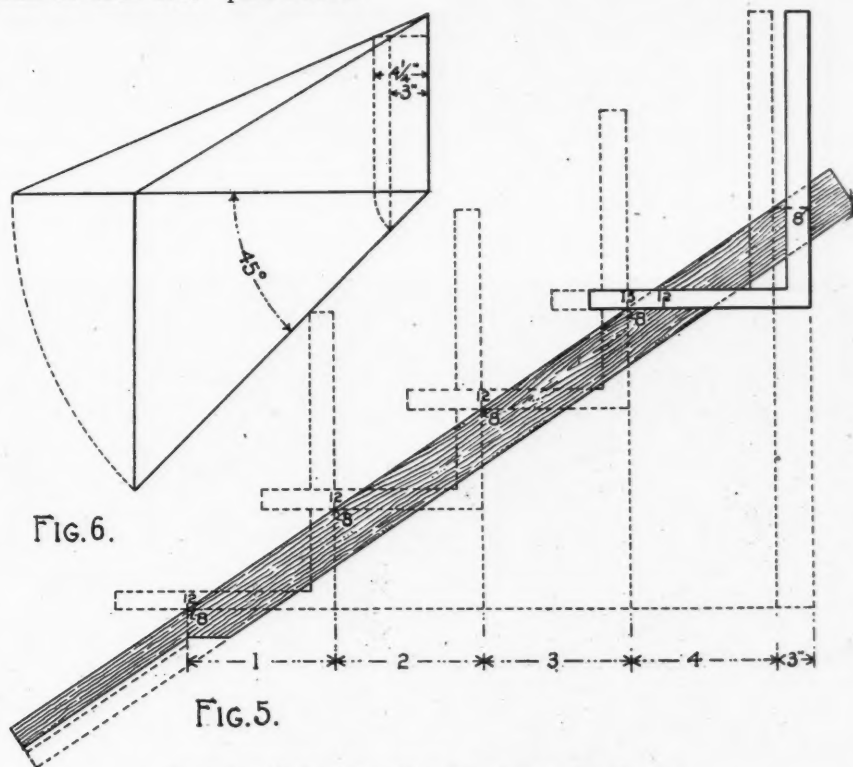
The dotted lines running off into space show the full size calculating points of the rafter.

Some have trouble about framing the rafter when it has a projection or tail, but this should not be allowed to bother any one, if one stops to think a minute, as it will be seen that the seat cut extends into the measurement point of the rafter. That is, if the measurement is taken on a line along the side of the rafter, as shown in the first illustration, then the seat cut stops at that line, or if the measurement is taken on the top edge, then the seat cut should extend into a plumb line directly under the measurement point, as shown in the second illustration. The vertical depth can be anything desired, but the bearing space of the seat cut should be ample for nailing to the plate. The vertical depth of the tail can be varied as indicated by the dotted line, regardless of the horizontal depth of the seat cut.

For finding the length and cuts for the corresponding hip or valley, the procedure is the same as for the

common rafter, but the figures to use on the square should be 17 and 8 and applied the same number of times, but for obtaining the corresponding length for the 3 inches the square must slide over not 3 inches, but the amount equal to the diagonal of 3 inches square, which in this case, is equal to $4\frac{1}{4}$ inches, which may be quickly found by measuring diagonally across from 3 to 3 on the square.

In the sixth illustration this proportion is clearly illustrated by a line drawing, which the reader will note is the same as is shown in the fourth illustration in connection with the steel square, with the fractional part added.



Measuring Rafters Length by Laying on the Square.

It should be remembered that the measuring points of the hip and valley rafters, are at the center of the rafter and just how to place the square on the side, or edge of the rafter, so as to make the measurements and cuts come right at the center, furnishes a problem that is not generally understood, even among those that consider themselves well up in the art of roof framing, but it should be remembered that the vertical distance down to the plate at the side from the top edge of the hip or valley, whether it is backed or not, should equal that of the corresponding common rafter and by extending the seat cut one-half of the thickness of the hip, will clear the corner of the plate and will bring the edges of the rafter in plane with that of the common rafter.

In our next article we will continue by taking up the side cuts, lengths of jacks, etc.



STUDY methods if you would overcome obstacles. Greatness is simplicity plus diligence.

The Dry Kiln Scientifically Considered

SOME OF THE PRINCIPAL FACTS BROUGHT OUT BY THE FIRST EXPERT INVESTIGATION OF THE KILN DRYING PROCESS FOR LUMBER—THE CONSTRUCTION OF THE HUMIDITY REGULATED KILN

TO THE EDITORS

Silver Lake, Minnesota.

Will you kindly give me some idea about piping a small drying kiln, which I intend to use for drying oak lumber. Building is 6 feet by 18 feet, 10 feet high, double sheathed with D. and M. fencing.

How long should well seasoned lumber be dried?

F. BREN.

SINCE several readers of the AMERICAN BUILDER have sent in requests for information just such as that required by Mr. Bren, there is no doubt that a few of the facts and principles brought out by the work of Harry Donald Tiemann, in charge of the Section of Timber Physics at Forest Products Laboratory, Madison, Wisconsin, will not be amiss at this time. The research work carried on at the Forest Products Laboratory constitutes the first serious expert investigation which has ever been made to determine the fundamental facts underlying the proper

eycomb except that the wood cells are a great deal longer in proportion to their width than those of the honeycomb and they are not so uniform. The size and arrangement of cells varies greatly with the kind of wood. Between the vertical cells and fibers, and lying in a horizontal and radial direction, are the medullary rays, which are composed of short, blunt, thin-walled cells which appear as the silver grain in quarter-sawed oak.

Water in the green wood exists as free water contained in the cavities of the cells or pores, and as "imbibed" water intimately absorbed in the substance of the wood. The removal of the free water does not effect the physical properties of the wood in most cases, but as soon as any of the "imbibed" water is taken away, shrinkage takes place and other changes occur. An important point in the drying process is

found in the "fiber saturation point" which is the point at which the cell walls or substance of the wood becomes saturated. The substance of the wood, which is half as heavy again as water, is organic and its structure is very complex. The foundation part of the substance is known as cellulose, found almost pure in cotton, with which is combined another material called lignin.

Some people are of the impression that the drying process has, as a part of its object, the removal of sap from the wood. This im-



Surface Effects in Drying. The Two Boards on the Right Show Collapse in Curved Lines Across the Surface. Remaining Two Boards Show No Collapse. Outer Board on Left is from Heartwood; the Others from Sapwood.

preparation of wood for use in almost any way.

As the wood is taken from the forest it contains a large amount of moisture which must be removed before it is fit for use for most purposes. If the removal of this moisture consisted in simply a process of evaporation, the construction of a dry kiln would be a simple matter. The fact which complicates the process is that the removal of moisture is accompanied by physical and mechanical changes in the lumber. The importance of determining the correct process of drying is realized when it is remembered that any injury produced in drying cannot be corrected later on.

In order to understand the correct method of removing the moisture from the lumber, it is necessary to obtain an idea of the structure of the wood. The microscope shows that wood is made up of very small cells arranged in a manner similar to those in a hon-

impression is faulty since there is very little true sap in the wood itself and none at all in the heartwood. The water is carried from the roots to the leaves thru the sapwood and the true sap, which is formed in the leaves, descends thru the bark to feed the living tissues between the wood and the bark.

Some of the most important physical properties which influence the drying of wood are these: The wood substance begins to shrink only when the wood is dried below the fiber saturation point and shrinkage is about twice as great circumferentially as in a radial direction. Moisture tends to transfuse thru the wood from the center to the surface, from the hot toward the cold portion of the wood. Wood is soft and plastic while hot and moist and becomes set in the shape in which it dries; the collapse of cells may occur while the wood is plastic. The absorption or loss of moisture is governed by the relative humidity of the air

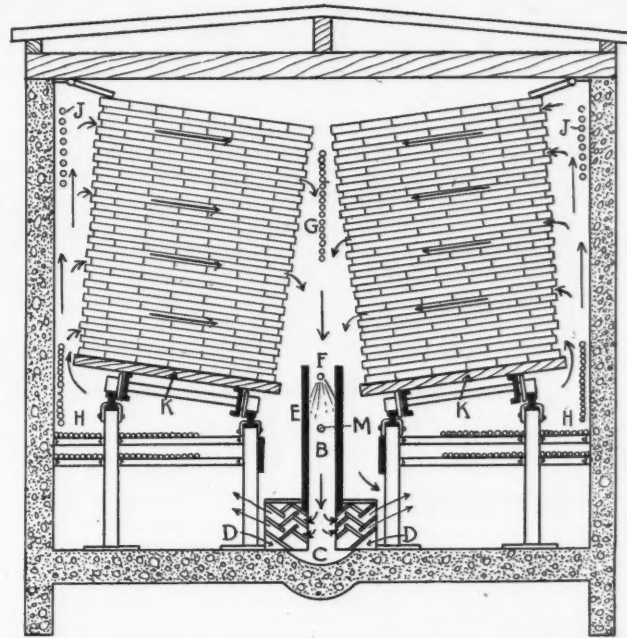
rather than by the temperature. Rapid drying produces less shrinkage than slow drying at high temperatures but rapid drying is very apt to cause case-hardening and honeycombing especially in dense woods.

Wood is dried to reduce shipping weight, to reduce the quantity necessary to carry in stock or to prepare it for use and improve its quality. The last reason calls for careful and scientific drying and requires the most intimate application of the facts known in order to establish a process which will be successful in its purpose. Of the two most common methods employed—air drying and kiln drying—the latter method seems to possess the advantages that there is less material lost, a better quality of product produced, elimination of sap stain, fixation of gums and rosins and a reduction in the tendency to take up moisture.

The study of the proper drying conditions has established the requirements for a satisfactory dry kiln as one in which the humidity is under control at all times, one in which an ample circulation is provided at all points and one in which the proper temperatures may be maintained uniformly. A dry kiln which will meet the requirements has been developed in connection with the work at the Forest Products Laboratory and after being improved in several ways over its original design it has finally taken the form shown in the sketch.

This type of dry kiln may be called a "humidity regulated kiln" from the fact that it is possible to control the humidity at all times. In addition to this important feature the problem of ventilation in the lumber piles has been given special attention. Of course, the temperature and humidity within the kiln indicate in no way the conditions of drying within the pile of lumber if the circulation in any portion is deficient. It is possible to have very rapid circulation thru the open spaces and channels of the kiln itself while stagnation exists within the piles.

Wherever the circulation of air becomes sluggish the



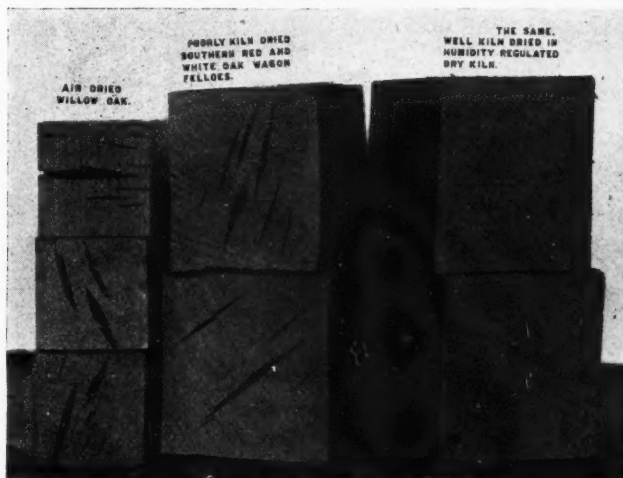
Dry Kiln Design Developed in Connection With Experiments at Forest Products Laboratory, Madison, Wisconsin.

temperature will decrease and the humidity may increase even to the point of saturation. Because of the fact that evaporation is a cooling process it is necessary to constantly supply enough hot air to keep up the temperature.

It will be noticed in the sketch that the lumber is piled in such a manner that the hot air entering the pile is directed thru descending channels. This is an important feature. In most of the dry kilns constructed without a thorough knowledge of the problem and, in fact, in the original form of the "humidity regulated" kiln, it was attempted to drive the air against its natural direction of circulation. Since the air is cooled in passing thru the pile its tendency is to settle to the bottom of the kiln and any attempt to force it upward is sure to result in stagnation in some of the channels not directly in the path of the main upward circulation. By taking advantage of the natural circulation it is not only possible to secure a more thorough circulation, but there results a self-regulatory action. The colder the lumber the greater the circulation produced. Therefore, in the cool, moist portion of the pile the circulation will be greatest, as it should be.

The construction of the kiln illustrated, which is the simplest typical form, will indicate how this type is built. The central flue, B, together with the water spray F and the baffle plates DD constitute the humidity control feature. The temperature of the spray water is under control and the air passing down the flue may be completely saturated at any desired temperature. The spray also acts as an ejector, forcing a circulation thru the flue. The baffles DD wipe all entrained moisture from the air and deliver it to the heaters at the proper degree of saturation and correct temperature. The heating system, H, is concentrated

(Continued to page 128.)



Showing Defects Due to Improper Drying Which May Be Eliminated by Use of the Humidity Regulated Kiln.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Encouragement From Canada

London, Ont., Canada.

To the Editor: I extend to you the season's greetings and wish to say that as a charter member of the AMERICAN BUILDER I appreciate the effort that you have made to make it the best journal of its kind on the continent, and I believe your subscribers appreciate it as much as I do. You have no doubt fulfilled your promise of a year ago of making it the leading building magazine.

The items from the "Man from the Lumber Yard" have been fine. I wish he would give us some pointers on Builders' Clubs. It seems hard work to keep alive the interest in builders' exchanges here in Canada that there ought to be.

Wishing you greater success in 1917 than in the past, I am one to stand by the AMERICAN BUILDER.

T. R. WRIGHT,
Builder and Contractor.



Big Grain Elevator Frame

To the Editor:

Roselle, Ill.

I am a subscriber of the AMERICAN BUILDER and am sending you a photograph of a grain elevator which I put up last August at Roselle, Dupage County, Ill. The building is 40 ft. wide, 140 ft. long and 30 ft. posts. The frame is

of heavy yellow pine timber construction. The building is occupied by the Roselle Mill & Lumber Company. Owner, John C. Hattendorf.

LOUIS MENKE,
Contractor and Carpenter.



Question for Inlayers

To the Editor:

Chanute, Kan.

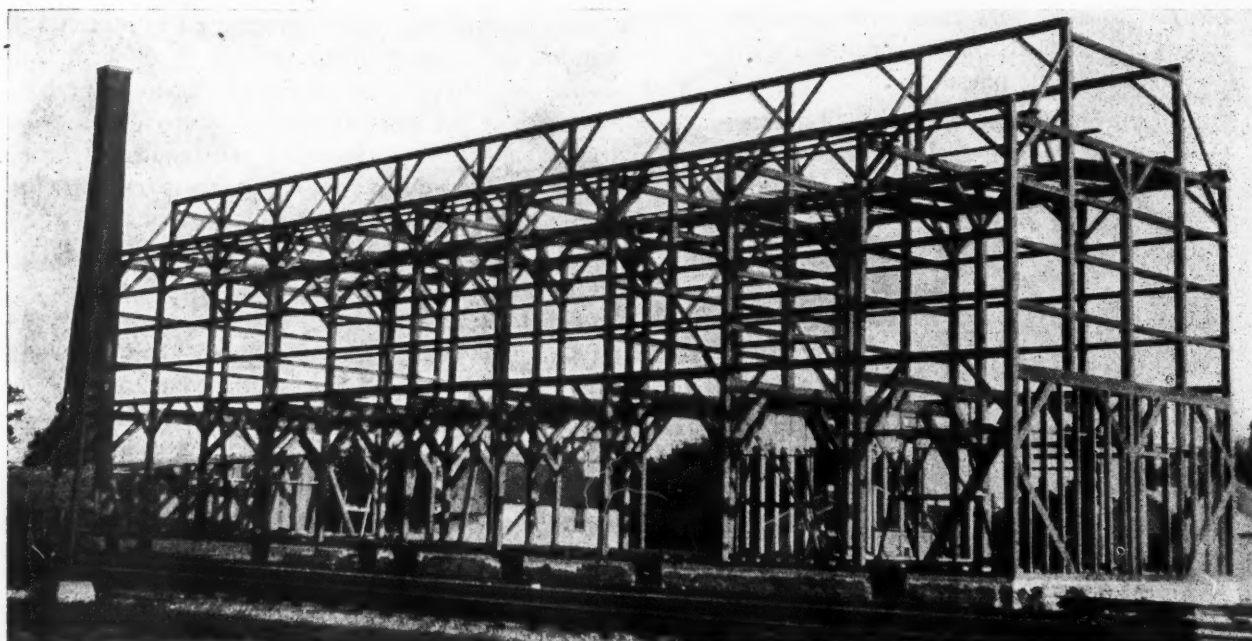
Seeing a reproduction of an inlaid table top in the December AMERICAN BUILDER, impels me to ask thru the correspondence column or of the editor as to the manner of fastening the individual blocks in such a table to the background.

I have made a table with over 500 separate pieces of wood in the top and used Le Page's liquid glue, but some blocks of lignum-vitae do not stay "put." They seem to rise up, necessitating the refinishing of the table top.

The design I used is given in part on page 22, "The Steel Square and Its Uses," Vol. 1. The large star in black is of lignum-vitae. I also used mahogany, walnut, rosewood, cherry, plum, hedge, oak, bird's-eye maple, ash, red cedar and orange wood.

Is there any book on the subject giving detailed methods of doing this class of work? Also, is there any market for work of this kind?

EDW. I. BARNES.



View Showing Heavy Timber Framing of Grain Elevator Built for John C. Hattendorf by Louis Menke at Roselle, Illinois.



W. H. Hanes and His Eight Men Who Erected the Ranch House and Barn of J. M. Collingwood at Pretty Prairie, Kansas.

House and Barn for \$20,000.00

To the Editor: Pretty Prairie, Kan.

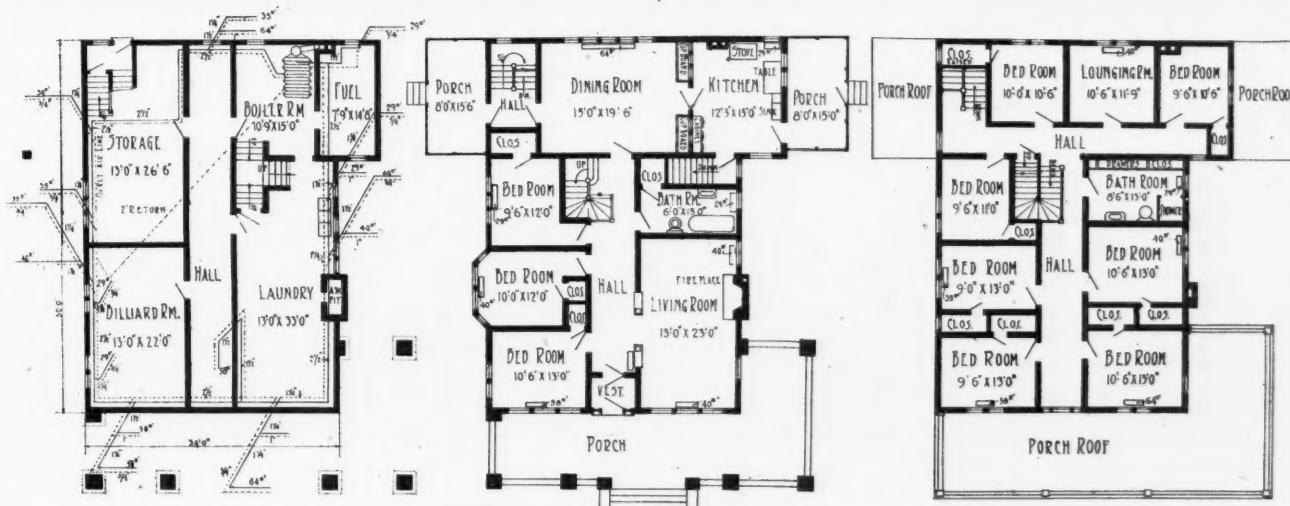
I am sending plans of the ranch house and barn of Mr. J. M. Collingwood, of Pretty Prairie, Kan.

The barn is arranged inside just as the plan shows. The house and barn are boxed, papered with "Neponset" water-proof paper, and covered with cedar siding. The cupolas you see are the "Millcor." The four on the gable ends are

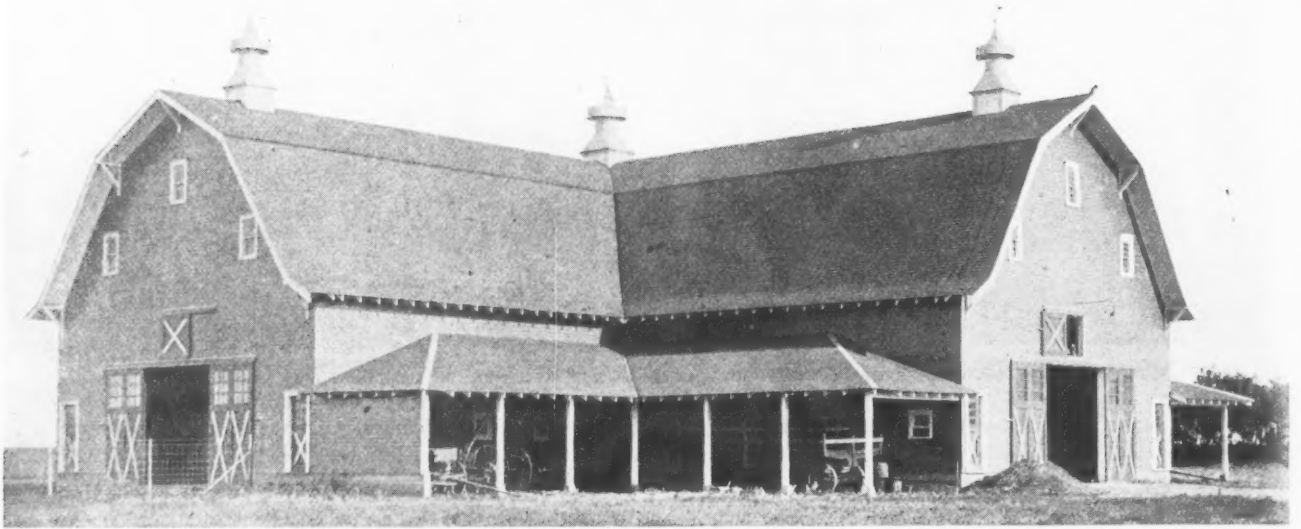
4 by 4 by 11 feet 6 inches and the center one is 5 by 5 by 13 feet 6 inches. The feed rack, feed boxes and stall partitions are Hunt, Helm, Ferris & Co. products. The track and hangers are Louden.

The track runs from the center to each gable and has turntable in center. The doors are hung on National No. 88 hanger storm-proof track.

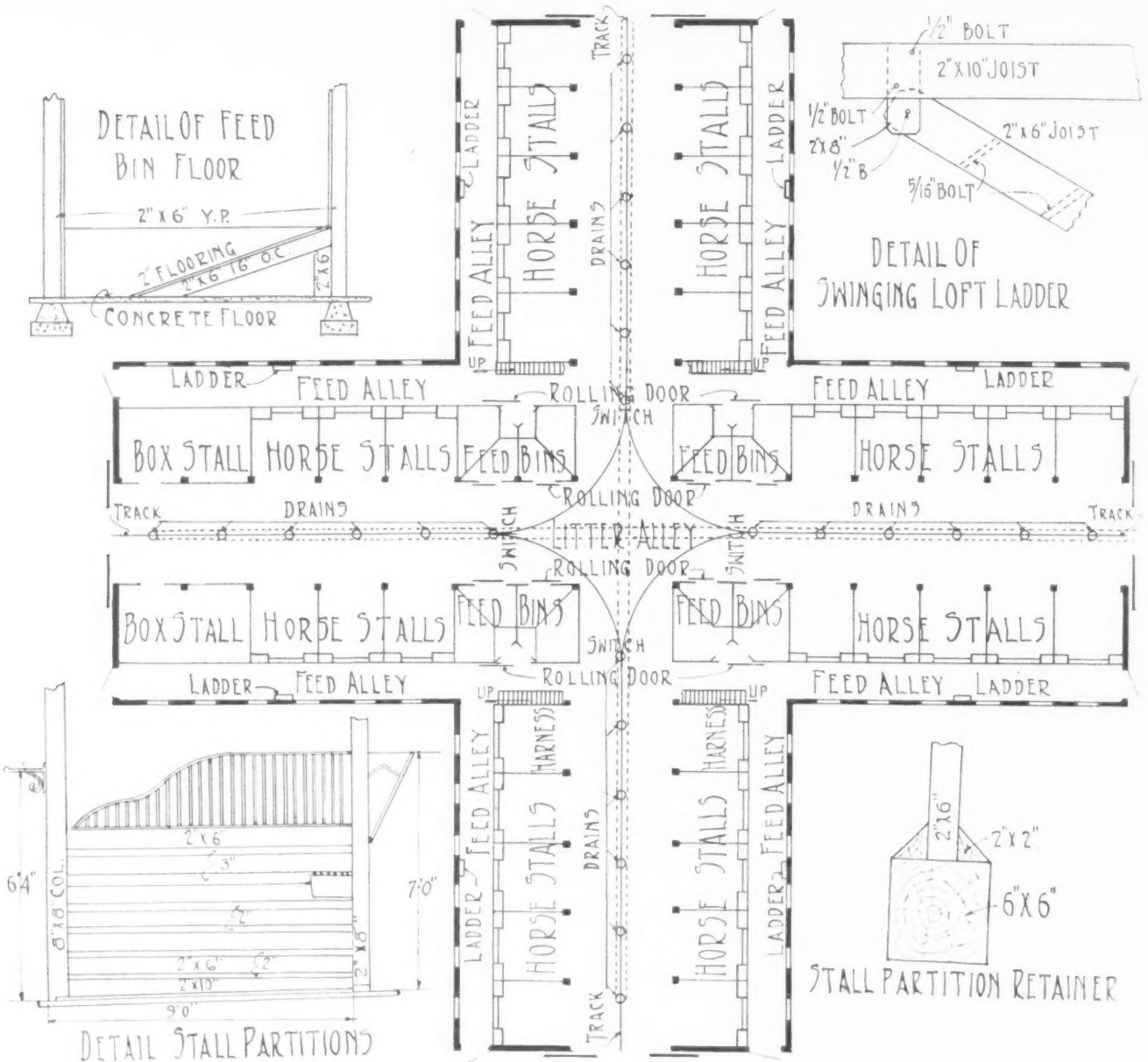
The barn cost about \$9,500.00, and the house about \$10,500.00.



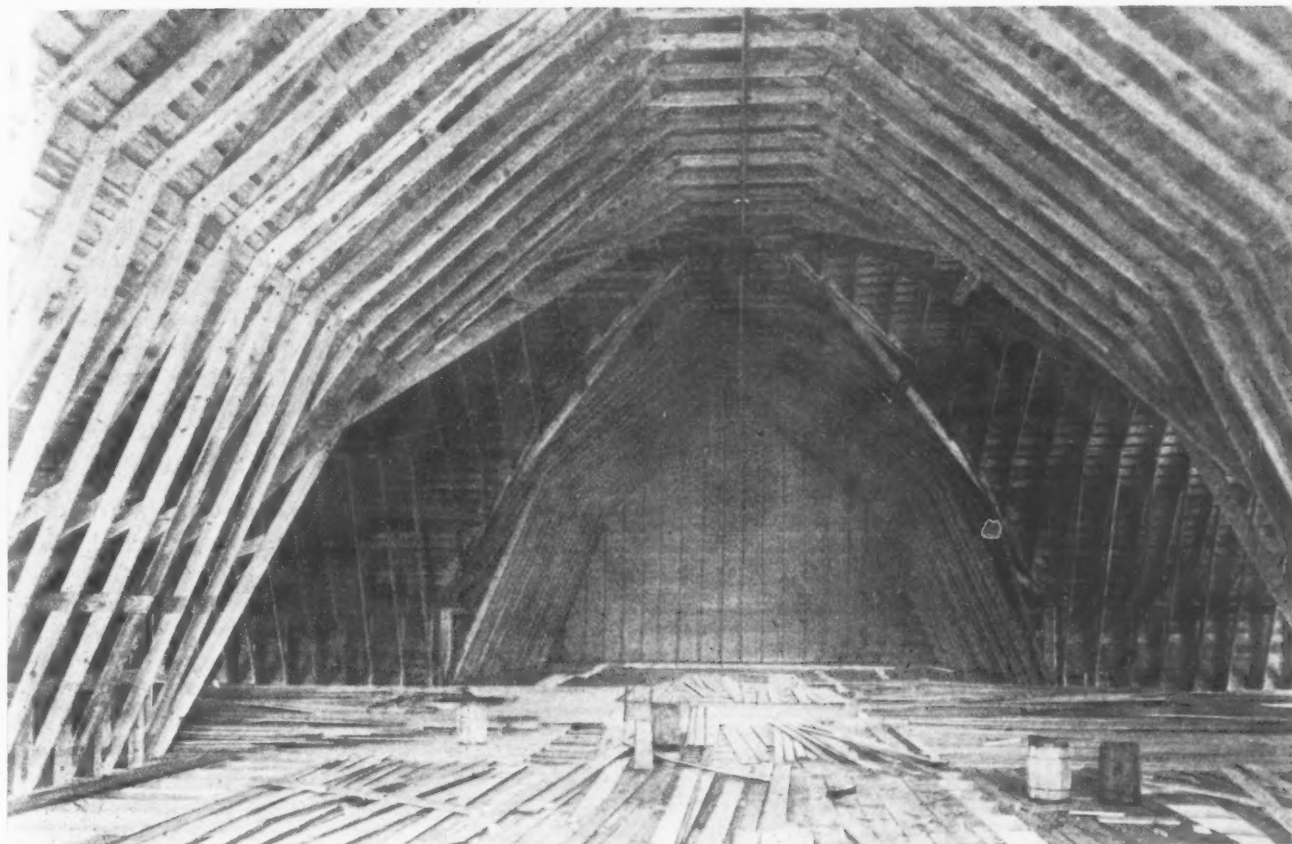
Perspective View and Floor Plans of Ranch House Built by W. H. Hanes for J. M. Collingwood at Pretty Prairie, Kansas.



Big Horse Barn on Farm of J. M. Collingwood, Pretty Prairie, Kansas. Barn is Built in the Form of a Cross. Cost \$9,500. W. E. Huise, Architect. W. H. Hanes, Builder.



Floor Plan and Details of Collingwood Barn at Pretty Prairie, Kansas.



Interior View of Collingwood Barn at Pretty Prairie, Kansas, Showing Large Hay Storage Space Provided by Plank Framed Roof

The house is modern in every way. Hot water heat. The light plant is 110 volts, 57-cell storage battery. Mr. Collingwood designed this house and barn; W. E. Hulse, of Hutchinson, drew the plan, and I had the general contract.

W. H. HANES, Contractor
and Builder.

Who Will Exchange Greenhouse Pointers With This Man?

To the Editor:

Brockville, Ont., Can.

I would like to see something on greenhouse construction, as I have built several around here, but like everything else, there is something to learn about them.

G. A. MONROE.

Wood Pin Porch Swing

To the Editor:

Jackson, Minn.

I am sending you a drawing of a porch swing, which you may be able to use. The novel feature about the swing is that it is made without bolts, screws or nails, and may easily be taken apart by removing several pins. No material thicker than $\frac{3}{8}$ inch is used.

M. A. NEUDECKER,
Department of Manual Training,
Jackson High School.

Up Against the Same Problem

To the Editor:

Maryville, Mo.

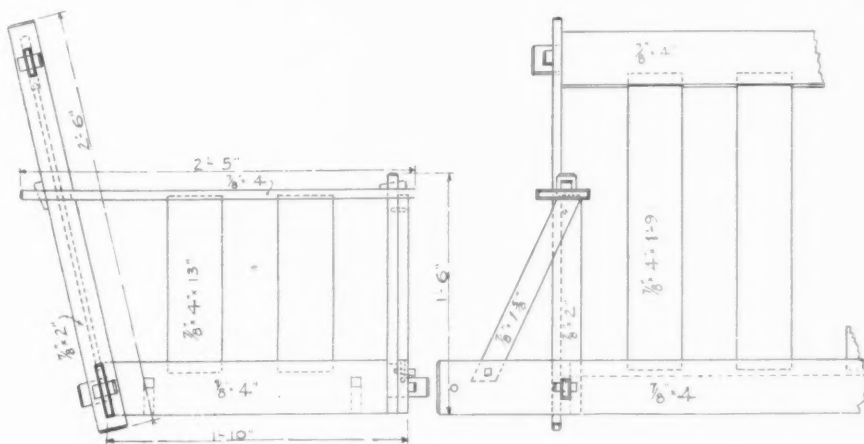
By some accident I failed to receive the December number of the AMERICAN CARPENTER AND BUILDER. I see by the January number that your Mr. Moore had an article in the December issue. I have read with very much interest his article in the January number and would like very much to have the December number. The party that he has written about has met and seems to have solved the very problem I am facing here.

I have built a frame home 32 by 36 and having sold the same am now ready to re-build. The hollow tile with either stucco or face brick is my ideal, but have always been held back by the talk of high price. Could I obtain the blueprints of the house under discussion in Mr. Moore's article? This is just about right, and I could make minor changes.

M. J. ALDERMAN, Treasurer,
Adlerman-Yehle Dry Goods Co.

Answer—We will undertake to furnish complete working plans of this house. It is a winner, and the cost in brick and tile is surprisingly low.

EDITOR.



Details of Wood Pin Porch Swing Made Without Bolts, Screws or Nails.

Scale for Inscribing Polygons and Circles

To the Editor:

Seattle, Wash.

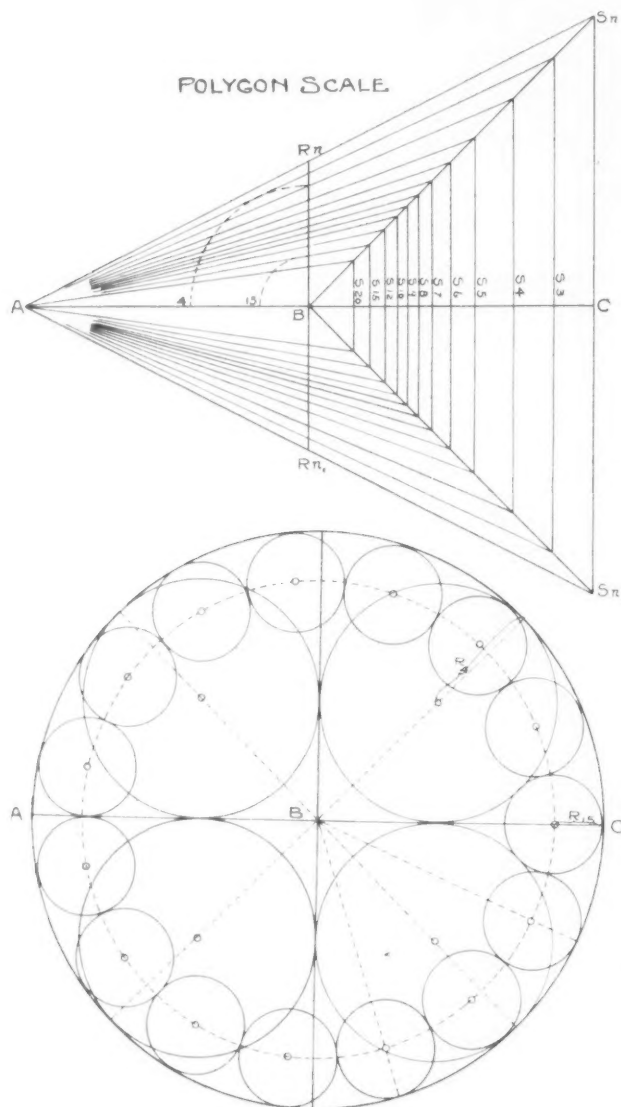
Enclosed please find a sketch for a scale, which may be useful in dealing with problems like those Mr. Woods so intelligently demonstrates in frequent issues of the A. B.

This scale is intended to solve the problems of inscribing regular polygons and small circles in a given circle. The base for this particular scale is taken as 2 inches and represents the radius of the given circle. The line A B in the scale is that base. A C is double A B and consequently equals the diameter of the circle. The lines marked S 3, S 4, S 5-S 20 are the lengths of the sides in an inscribed regular polygon of as many sides as the figure indicates. In the line B R_n from B up is the radius for corresponding inscribed small circle to be taken. This scale is extended down to R_n and giving the length of the diameter when doubling.

To use the scale for inscribing a regular polygon, the full length of these lines marked S 10, etc., or between the lines B, S_n and B S_n, should be taken.

The rest of the scale may explain itself. An example where fifteen and four circles are inscribed in a given circle is illustrated.

When the radius A B is increased, the other measures are



Scale Suggested by Knut A. Westholm for Inscribing Regular Polygons and Small Circles in Larger Circles.

increased in the same proportion. The scale is constructed by the formulas: $S_n = 2 \sin \frac{180^\circ}{n}$ and $R_n = \frac{S_n}{2 + S_n}$, where

S_n represents the side of inscribed polygon and R_n the radius for inscribed circle.

The following figures may be interesting. They give the numerical values for far radii of inscribed circles from 2 to 20 in number when radius of the given circle is 10 inches, or 10.

R₂ = 5; R₃ = 4.64; R₄ = 4.142; R₅ = 3.7028; R₆ = 3.333; R₇ = 3.022; R₈ = 2.765; R₉ = 2.548; R₁₀ = 2.360; R₁₁ = 2.199; R₁₂ = 2.057; R₁₃ = 1.931; R₁₄ = 1.8102; R₁₅ = 1.7220; R₁₆ = 1.6353; R₁₇ = 1.555; R₁₈ = 1.4821; R₁₉ = 1.445; R₂₀ = 1.4105.

In the hope that this attempt to illustrate this problem may be of interest and perhaps useful for readers.

KNUT A. WESTHOLM.



How to Make a Home Builders Portfolio

To the Editor:

Stratford, Wis.

I started a loose leaf special plan book a couple of years ago and it has proven so exceptionally valuable that I cannot refrain from telling the readers of the BUILDER about it. I don't imagine it is anything original. No doubt there are hundreds of them in use, but I have never seen one mentioned in any magazine; hence my temerity.

To begin with, I am not a contractor. Among my numerous duties I find time to handle the retail sales for a local lumber manufacturing concern; but it seems to me that such a book, changed to meet local or individual requirements, would be of equal value to the dealer or contractor. Mine is arranged to meet my own needs.

I secured an ideal loose leaf scrap book with gummed pages that can be purchased at any live stationer's and made a step tabbed index which is arranged as follows:

Bungalows costing up to \$2,000.00.

Bungalows costing from \$2,000.00 to \$4,000.00.

Small cottages and semi-bungalows ranging in price from \$1,200.00 to \$3,500.00.

Two-story houses costing up to \$4,000.00.

Farm houses.

Barns and farm buildings.

Commercial buildings.

Photos of interiors and special features.

Photos of exteriors, showing different types of residence architecture.

Miscellaneous details.

No plan goes into this book unless some particularly commendable feature takes it out of the ordinary class and makes it especially desirable—such as low cost of construction, a particularly nifty design or an unusually well arranged floor plan. For instance, Radford Design No. 6629 is in this book because of the fine and convenient arrangement of the rooms in a house of moderate cost. My efforts are directed towards keeping the number of plans in this book down to a carefully chosen few rather than to secure a large number. Why? Did you ever watch a woman in a milliner's shop trying on hats? Same principle. If there were only a half dozen hats on display, at the price each one wants to pay, there would be nothing to it. If a house is built from one of the plans in this book I take that page out and file it and put in another equally desirable one. This for the reason that in a small town it is well to prevent duplication in design.

Under photographic interiors I have a few carefully chosen pictures showing different ideas in interior woodwork and arrangement that no amount of talking could explain and no

(Continued on page 98.)



THE convenience of a two or three-car garage is greatly increased if the entrances can all be open at the same time. You can provide for this in the garages you build by using

Stanley Garage Hardware

DOORS hung on Stanley Garage Hinges take no inside space to operate, swing easily, without sagging, and close weather-tight. Stanley Garage Door Holders 1774 keep them from slam-

ming against each other or the incoming and outgoing cars. Stanley Garage Hardware will give long and satisfactory service and improve the appearance of every garage you build. You can get it at almost any builders' hardware store.

The Stanley Garage Hardware Catalog A-3 will be helpful to you in planning garages. If you haven't it, send for it today

The Stanley Works
New Britain Conn., U. S. A.

New York—100 Lafayette St.

Chicago—73 East Lake St.

Good Varnish

We wish that you had greater incentive and encouragement to do fine varnish work—that your customers were more intent upon quality, durability and low final costs—less intent upon lowest bids.

In our advertising to the public we call attention to varnish of quality and long life in order that your customers may appreciate your recommendation of good varnish and good workmanship and pay for them.

Murphy Varnish

"the varnish that lasts longest"

can be depended upon to give the fine durable finish that you know wood ought to have. It costs you no more than poor varnish because it goes farther. It flows more easily. It rubs better. It saves labor.

Our principal house-finishings products are:

Murphy Transparent Interior Varnish
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Murphy Transparent Spar Varnish
Murphy Nongloss Interior Varnish
Murphy Semi-Gloss Interior Varnish
Murphy Uni-vernish
Murphy White Enamel
Murphy Enamel Undercoating

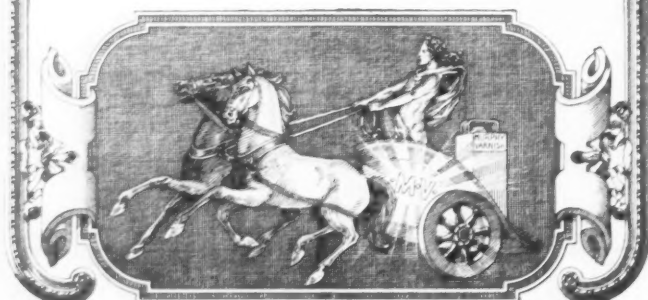
Send for more information.

Murphy Varnish Company

Franklin Murphy, Jr., President

Newark New Jersey

Chicago Illinois



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

drawing make clear to the average man or woman unfamiliar with such things. This section consists of such things as photos of neat stair and colonnade designs that are a little out of the ordinary, breakfast nooks, in-a-closet beds, built-in cabinets, ceiling beams, paneled wainscots, model kitchens, etc.

A few good representative photos of different style residences that are very well detailed are shown in another section and so on through the book.

Now for the last section. We aim to impress upon our contractor and customer friends that we are willing to help them with their problems as well as to sell them lumber and in order not to have our bluff called I have to keep pretty well informed; but I find that my head won't hold everything; so I conceived the idea of clipping and pasting in this book every likely kink that I run across. Such things as details for curve in roof at cornice, how to center porch beam on columns, details of simple trusses for different size spans, storm proof casements, rain proof threshold, and other less commonplace ideas. It will surprise the average man how often a good carpenter will run into a snag and holler for help. There was hardly a week this season when some builder didn't call on me to help him out on something of this kind. If I didn't know how, I just about knew where to find out in a hurry. This last section would be particularly valuable to a contractor if he would take the time to work out a small book of this kind and keep it in his chest.

If the ideas herein contained are of help to just one of your readers I will feel that I have been well repaid for writing this screed.

You will be interested to know that nearly every plan and every illustration in this book has been clipped from the AMERICAN BUILDER, altho I take two other building magazines. It is easily the leader in its field and it certainly deserves a subscription list that is second to no other trade or technical journal in the land.

L. B. CLARK,

With R. Connor Company.

Wants Low-Priced House Plans

To the Editor:

Irvington-on-Hudson, N. Y.

I think if you could show some low-priced houses suitable for working men, say six-room cottages, that could be built on a 25-foot lot, leaving a path on one side, say 22-foot front, with not much cornice projection on sides, that at least some of your readers would appreciate it. Building business very slack for last three years in this neighborhood.

MICHAEL KEINAN.

Childhood—Youth—Home

They were playing with blocks one afternoon

As children will often do

And he said as he raised his eyes to hers

"I'm building a house for 'ou."

Then the little maid laughed in merry glee

"O, build me a castle great

Like the one we saw in the picture book

The one wif the iron gate."

* * *

Two figures are strolling beneath the trees

As the twilight shadows fall

And the youth is waiting to hear the word

That makes her his life, his all.

Now homeward together the lovers turn

While the words they speak are few,

To the maiden's ears the sweetest are these

"The house I will build for you."

(Miss) JULIA GRAYDON,

Harrisburg, Pa.

CLAYCRAFT *Brick*

When considering face brick for that new building remember the following facts concerning Claycraft, Velour and Corduroy brick:



Our Outdoor Display

The photograph on the cover of our catalog, illustrated below, is of our outdoor display in Columbus.

- ¶ They never show dirt, retain their original color forever and grow more beautiful with age.
- ¶ They have an individuality and distinctiveness all their own and stand the test of critical examination near and far.
- ¶ Time, the leveler of all things, deals kindly with them.
- ¶ They are artistic, beautiful and good to live with.

Every shade known to claycraft and the brick maker's art — Velours, Corduroys, Buff, Golden Matts, Green and Golden Raglans, Dry Press, Golden Flash, Smooth Ivory, Buff and Grey Impervious. These are all made in Claycraft brick.

The Claycraft Brick Co.

Hartman Building
Columbus, O.



MAIL THIS COUPON TODAY

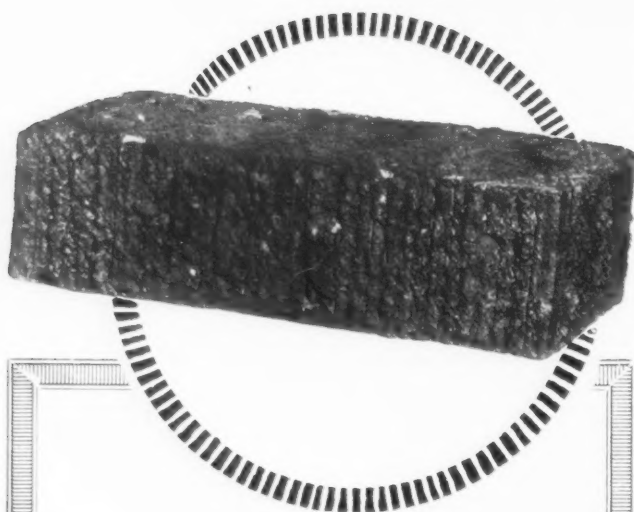
Claycraft Brick Co., Columbus, Ohio.

Gentlemen:—Please send us your new catalog showing your brick in colors, also your catalog of brick mantle designs. We expect to put up the following buildings this year:

Name

City

We buy of (dealer's name) State



ALLIANCE MULTI-COLOR RUFF BRICK

EXCEL ALL OTHER BRICK as to beauty of coloring. The chromatic scale of colors runs through the beautiful rough-texture faces, most of the individual brick showing on the face of each brick **three or four or more** of the seven primary colors or their shades—gun-metals, wines, chocolates, browns, ox-blood reds, buff tones and multi-colors.

These brick are made of Ohio shale of the highest grade. They are thoroughly vitrified, permanent in color, standard in size—right in every characteristic. They are being used in many of the finest buildings in America.

Mr. Dealer: If you want the best seller among the many brick made to-day, ask for the agency for **Alliance Multi-Color Ruff Brick**—beautiful rough-texture and all the colors of the rainbow.

Samples and prices on request

The ALLIANCE BRICK CO.

25 South Linden Ave. ALLIANCE, OHIO

Two Barns Built by Louis Kane

To the Editor:

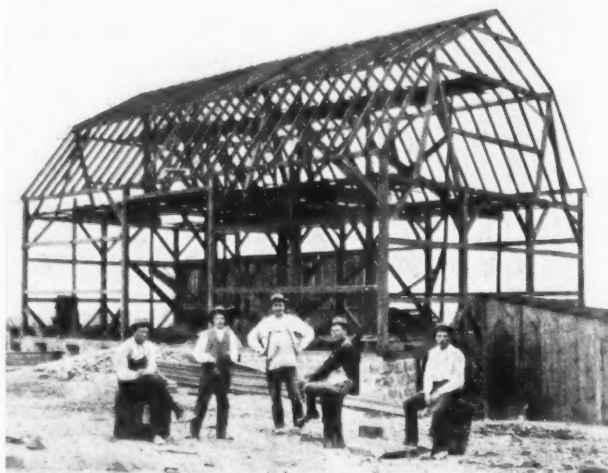
Dubuque, Iowa

Enclosed you will find \$2.00 for my renewal to the AMERICAN BUILDER and a copy of Radford's "How to Read Plans and Take Off Bills of Material."

Please excuse my late renewal, as we were so busy all year. The time just flew around.

I enclose a few photos of some of our work.

LOUIS KANE



Frame of Dairy Barn on Rooney Brother's Farm at Asbury, Ia., Erected by Louis Kane.



Cattle and Horse Barn on Rudolf Faust Farm at Bennettsville, Ia. Erected by Louis Kane.



Who Were the Great Carpenters?

To the Editor:

Boston, Mass.

In discussing famous men who have been shoemakers, the query arose as to what famous men have been carpenters. Peter the Great was mentioned, Walt Whitman and Christ, and there the list dropped. Somehow we are unable to determine who were the most famous carpenters in history. Perhaps you can enlighten us, or some of your readers. The question is an interesting one.

PERRY WALTON.

Walton Advertising and Printing Co.



YOU must get in step with the times. The times will not get in step with you.

We Want To Tell You Again This Month About That Fire-Proof Brick House For Less Than \$2,500.00

SO many contractors took such a lively interest in these splendid little houses last month that we are showing them again. They are a revelation to many, in that they have actually been built of brick at about the cost of frame. These little houses are full two stories, have bath rooms, cemented coal cellars, hot and cold water, furnaces, laundries, china closets and kitchen cabinets and they cost less than \$2,500.00—to be exact \$2365.00. The construction is first-class throughout.

Brick construction has many advantages over frame—no painting, no repair bills, lower insurance, cooler in summer, warmer in winter and always beautiful and better looking with age. Talk to your next prospect about brick and you will find him interested.

Did You Get The Free Floor Plans And Itemized Cost Of Labor And Material?

We have made floor plans of these houses, drawn to scale, and will send free blue prints of them, together with an itemized list of labor and materials showing costs in detail, to any reader of the American Builder who will write for them. If you know of some one who is going to build a house this spring this information will help you land the job. Every man prefers a brick house instead of frame, but most of them think brick is too expensive. Here is your opportunity to show him that it is not—and get a contract.

GET OUR NEW CATALOGUE—IT'S FREE

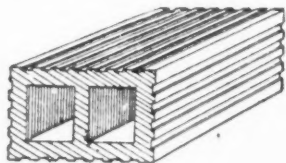
Write for our big new catalogue of Brick and Fireplaces, printed in natural colors.

The Beaver Clay Mfg. Company, New Galilee, Pa.
DISTRIBUTING AGENCIES IN ALL PRINCIPAL CITIES



Use Minerva Hollow Tile

Made of High Grade Ohio Fire Clay
for All Classes of Buildings



Consider this fire-proof material in all your building plans this year. It is being used extensively everywhere with benefit to both the contractor and his clients. We will be glad to quote you prices through your local dealer. Our new folder No. 5 is interesting. It tells you more about this material. Won't you send for it?

Metropolitan Shale Pavers

Are Ideal for Stores, Churches, Libraries,
Schools, Garages, Theatres, Etc.



Buildings of this type are very substantial and attractive when built of paving blocks. This you will appreciate when you see our new folder No. 10 full of such pictures and much valuable building information. Be sure to send for it.

Do not forget to write for Folders 5 and 10

Metropolitan Paving Brick Co., Canton, Ohio

Six Modern Plants Making 175,000,000 Brick and Tile Annually

TILE BAK

(Hollow Clay Tile)

Covered with STUCCO or

HOMESTEAD FACE BRICK

Makes ideal construction for Residences, Schools, Churches,
Banks, Garages, Theatres, etc. *It's Fire-Proof*
Send for Descriptive Pamphlets

The Barkwill-Farr Company ^{Nine Modern Plants} Cleveland, O.

Home Planning Helps

"Brick Homes at Low Cost" **Free**
10 Practical Small Homes
Perspective and Floor Plans

Send 10c for Postage

\$100 The Average Man's Home
50 Prize House Plans, Postpaid,
Range in Price \$3,000 to \$5,000

S-A-F-E

354 Leader Bldg. Cleveland, Ohio

The Commercial Woods of the Philippines— Their Preparation and Uses—

By E. E. Schneider

The above is the title of Bulletin 14, the latest publication of the Philippine Bureau of Forestry. This bulletin is by far the most comprehensive work on the subject so far published and also from the point of view of the wood-user, the most practical. It is a volume of 246 pages, exclusive of the indexes, and consists of five parts. Part I is a complete description of the forests and of lumbering conditions in the Islands; Part II, a detailed discussion of the mechanical and physical properties and of the structure of wood; Part III, a very full description of the various uses to which Philippine woods are or could be put, with numerous cross-references; Part IV gives, in the least technical language possible, a description of the methods of identifying woods, and part V, which occupies more than half of the book, gives minute descriptions of over 360 Philippine woods, with very complete notes on their distribution, sizes, supply, uses, mechanical properties and durability, etc.

Bulletin 14 is sold by the Bureau of Forestry at \$1.00, U. S. currency. Orders should be accompanied by a money order made out to "Director of Forestry, Manila, Philippines."



From Log House to Modern Farm House

(Continued to page 48.)

lights for the home. Acetylene gas is claimed to be as efficacious as natural or manufactured gas for cooking and lighting purposes. Thus the city woman has no advantage over her farm sister when she turns on the gas in her kitchen range at meal time.

Modern conveniences, too, are within the reach of the rural householder, who either cannot afford or is unwilling to expend the money necessary to install the things mentioned.

There is, for instance, the chemical closet, which may be installed in the home. This costs but little and is as sanitary as the closet made possible by running water. Chemicals change the feces into a liquid and at the same time purify it. Such a closet as this may be placed in any ventilated out-of-the-way enclosed corner of the house.

Furnace heat, too, has been made less expensive by the pipeless furnace. This invention, it is claimed, will cut the heating cost considerably, thru conservation of heat lost from the pipes in the cellar. It is based on the scientific knowledge of the circulation of heated air, does away with all but one central register and will heat any ordinary sized house. It also is available where there is no cellar and permits the basement—the rural cold storage plant—to remain such.

There was a time, not so many years ago, either, when the traveler in the country marveled at the wonderful barns and at the same time wondered at the small farm houses. There would be the windmill pumping water for the livestock while the water for the home was secured from a pump and carried into the house by hand. There was a reason and a good one for this strange contrast.

Livestock and the farm products produced the farm-

(Continued to page 104.)



THE KOERBER RESIDENCE, FOREST PARK BOULEVARD, FT. WAYNE, IND.
Before the application of the stucco finish, showing the

WHITACRE TILE

THERE is no cause to worry over the rapidly diminishing supply of timber in our land—once considered absolutely essential for building. The "Hills of Ohio" have within their embrace the answer to this problem; Fire Clay, which when scientifically treated makes a building material that produces homes and business buildings, warm in winter, cool in summer, moisture, sound and vermin proof, enduring as the ages, absolutely FIRE-PROOF and practically as cheap in first cost as frame.

Get Whitacre Tile Through Your Nearest Dealer

Whitacre Tile are now carried in stock by good lumber and building material dealers in many parts of the country. If your dealer does not carry it give us his name on the coupon below.

THE WHITACRE-GREER FIREPROOFING COMPANY

General Offices: WAYNESBURG, OHIO

CHICAGO OFFICE
538 South Dearborn Street

PITTSBURGH OFFICE
7138 Jenkins Building

MAIL THIS COUPON TODAY

WHITACRE-GREER FIREPROOFING CO., Waynesburg, Ohio.

Gentlemen:—We are interested in hollow tile for our territory and would like to know more about your material.

We expect to put up the following buildings this spring

We buy through (give name of dealer)

Your name Your address

Our Brick Houses Cost No More Than All Frame Houses

*Send for Free
Floor Plans
of this fireproof home*

HUNDREDS of contractors are now building of face brick veneer at the same cost as all frame. They back it up with hollow tile at 10% additional. You can do this. The American Builder shows you how.

You would rather build a beautiful face brick house than a frame one but you fear it would be too expensive to be profitable. Now, actually, there is but little difference in cost and this is discounted in that you are saved the expense of **painting, heavier insurance, depreciation and fuel.** Also your brick house has an **increased** selling value.

This is a real opportunity for contractors. A chance for you to put up these attractive brick buildings and realize a handsome profit.

Send for our free portfolio, beautifully printed showing our face brick in natural colors. Send for the floor plans of the building illustrated here. We will mail them promptly. Your dealer should be interested in our line. Let us have his name.

**THE KANSAS BUFF
BRICK & MFG. CO.**
BUFFVILLE - - KANSAS



er's income; the farm buildings, other than the house made up the farmer's revenue producing plant. A better and more modern plant meant a greater revenue and more profit. At that time in the history of the American farm, a great majority of the land owners were paying for their property. They were merely following the royal road to success; greater reproduction at the least cost, which means some personal privation.

Now, however, in the older parts of the country, the farmer's financial status has changed. He is no longer "the poor farmer," but is a business man whose products are a chief source of the prosperity of the country. Recently, too, he is on a par with the munitions makers, who are profiting by the war and the consequent inflation of prices received for his products. These facts have placed him in a position where he can afford the best life provides for himself and his family.

He has been quick to take advantage of this fact, too—the automobile provides a striking example. If memory is correct there is an automobile to each seven members of the population of Kansas.

Farm homes have undergone a remarkable change during the last few years and no one knows it better than the contractor and small town builder. They are demanding strictly modern homes and have the money to pay for them. This fact has been impressed upon the builder and has made him much more than a carpenter-contractor. He is now an architect who not only builds the home, but designs it and puts into his plans the lighting, heating and water systems that provide city conveniences on the farms.

Manufacturers of these systems have felt the effect of this change and are keeping up with the farmer's demands. They have been provided with a new outlet for their products and have not been slow to take advantage of it.

Getting back to the original thought—How long would the modern farmer and his family be satisfied with a log house? The answer might be: Just so long as he had to—but he doesn't have to.



Building of Brick at Minimum Cost

(Continued from page 51.)

the paneled walls, beamed ceilings, oak floors, big fireplace, and built-in bookcases and china closets. How to reduce that \$5,890 was a question. I was aware that brick veneer was not impracticable, altho not a usual construction. My contractor said that he could save me \$40 by veneer construction, and this saving was net, that is, the gross saving would be about \$500, but the studding would cost \$100. The \$400 looked good to me, especially when I knew that no one could tell the difference, inside or out, when the house was done.

The following were the advantages of the veneer

(Continued to page 106.)

FLEXIBILITY

in construction is an unexcelled feature of

NATCO·HOLLOW·TILE

The fact that it can be built into all kinds of arches and angles (aside from its well-known weatherproof, fireproof and vermin proof qualities) has taken a prominent part in placing NATCO in the front ranks as a superior building material.

Many special shapes, corners, jambs, sills, and fractional pieces are ready-made for the builder's use.

The ease, grace and economy with which NATCO Hollow Tile lends itself to almost any conceivable form of fireproof construction is well represented in this four-story apartment.

Ask your Local Dealer in building materials about NATCO prices, deliveries, and service.

If you do not have our BUILDERS HANDBOOK, mail the coupon today and get *your* copy.

NATIONAL FIRE PROOFING COMPANY

560 Federal Street, Pittsburgh, Pa.

Other Offices: New York Chicago Boston
Detroit Philadelphia Washington Syracuse

23 factories in the United States

NATIONAL FIRE PROOFING COMPANY OF CANADA, Ltd.
Office at Toronto and Factory at Hamilton, Ontario, Canada

Gramatan Court
Apartment Hotel,
Sagamore Road,
Bronzeville, New
York. Owners,
Lawrence Park
Realty Company,
Architects, Bates
and House, New
York City.
Walls of first and
second stories of
10 in. Natco glazed
tile; third and
fourth stories of
the 8 in. tile; gables above fourth
floor of the 2 in.
and 12 in. tiles.
Interior bearing
walls of Natco
XXX Tile the same
thickness as for
exterior walls.
Interior partitions
of 3 in. and 4 in.
Natco Hollow Tile.
Stairs of Natco
fire-proof construction. Entire
load, also fire-
proof stairs, car-
ried directly by the
Natco XXX Hol-
low Tile walls.

National Fire Proofing Company,
560 Federal Street, Pittsburgh, Pa.

Dear Sirs:—Please send me your BUILDERS HANDBOOK, free to engineers, architects and builders.

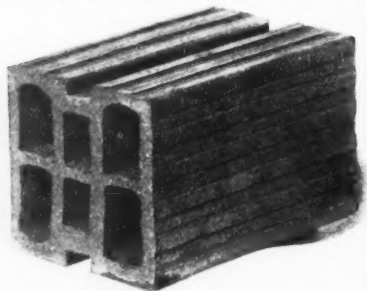
Name.....

Address

Town..... State.....

"HEAVY DUTY" INTERLOCKING TILE

The STRENGTH of BRICK and the DRYNESS of TILE are combined in Vigo American Heavy Duty Interlocking Tile to make a BETTER wall than solid brick and at two-thirds the cost.



We also manufacture Fire-proofing, Building, Arch, Partition and Drain Tile, Hollow Brick and other shale products. Send for our literature.

VIGO-AMERICAN CLAY COMPANY
7th and Ohio Sts., TERRE HAUTE, IND.

Rugby Face Brick

A high class face brick of rough texture, in red, dark and intermediate shades.

Standard Brick Mfg. Co.
Evansville, Ind.

The Keim Brick & Tile Company

Makers of

KEIM BRICK

DISTINCTIVE TEXTURE—CONVINCINGLY BEAUTIFUL

Plant: Mapleton, Ohio. Offices: Louisville, Ohio

Selling Agencies in All Principal Cities

Write for our new folder showing our line in full range of colors and textures.

USE Cornell Wood-Board for Walls, Ceilings, Partitions

This superior wallboard is the ideal material for walls and ceilings of HOMES, STORES, OFFICES, SCHOOLS, CHURCHES, THEATRES, GARAGES, FARM BUILDINGS, REPAIRS AND ALTERATIONS and for a HUNDRED DIFFERENT EMERGENCY USES. Write for a large sample and complete information.

CORNELL WOOD PRODUCTS CO.
C. O. FRISBIE, Pres.

Dept. T-3, 173-175 W. Jackson Blvd, Chicago

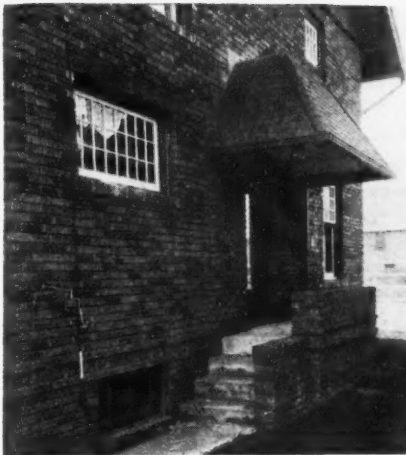
construction over a solid brick wall: A dead air space of at least 4 inches. This meant a dry house, because any moisture getting thru the mortar joints in a driving storm would simply trickle down the inside of the brick wall but could never cross the air space and injure wall paper, ceilings, or wood-work; a warmer house because of the insulating air space, and a saving of \$400, or about 7 per cent.

As constructed, the 12-inch cement cellar wall was built to grade level and on this was laid a 13-inch solid brick wall to a height of 22 inches with openings left for cellar windows, for in the finished house only the brick is seen, the cement cellar wall is entirely covered, not showing as in the case of frame houses. The 13-inch wall gave enough support for the floor timbers. On the inner courses of this brick wall was laid the 2x8 plate and the studding erected. The outside face of the studding was $4\frac{3}{4}$ inches from the face of the brick, so that the brick could be laid true even if a stud should warp a little or be forced out of place slightly when nailing in place. The window frames and door frames were then put in place and the brick laid up with every fourth or fifth course tied to the studding with galvanized "dogs."

The outside of the studding was not boarded and covered with building paper because the house is but one story with eaves overhanging three feet, so that a driving rain would touch only the lower courses of brick and, being low, the house would not be so cold, but for an exposed house, or one of more than one story, I certainly would recommend boarding between the studding and brick. Aside from keeping out the cold of January and February, I see no reason for the boarding. Because my living room, dining room and hall are paneled, the brick was back-plastered behind the wood.

In writing the specifications, I did not forget to state that every fifth course of brick should be "headers," for a veneer house that is all "stretchers" shows plainly that it is veneer, for there is no evidence that the face brick is tied into the common brick.

Every story should have an ending, but from appearances I can't hope to live to write of the end of this house. Low, brick, solid, enduring, it gives no sign that it will deteriorate much in my lifetime. For more than a year I have lived in it—the coolest house in summer I ever lived in; as warm in winter as any I ever lived in; more beautiful, especially after a driving rain or dense fog has washed off all the dust and dirt and brought out the various colors in walls and brick terrace; a house that climbing vines will not decay; a house of practically fire-proof exterior; a promise of minimum expense for up-keep and an assured low depreciation—all this in a house that cost only eight or ten per cent more than wood construction.



Build with Brick

BELDEN BRICK are suitable for every possible purpose

MORAL: BUILD WITH BELDEN BRICK

Written by E. P. ELZEY, Parkersburg, W. Va.

Bill Jones built a house out'n "dollar a knot" wood,
An' when he got it done it looked passin' good,
Which, we found, come erbout from the paint he put on,
Fer it didn't look good when the paint war' gone.

I calls back that summer, 'twere orful hot an' dry,
An' them boards all shrunk up 'till the nails let fly,
An' 'long that fall 'twere a mortal shame ter see,
How porely bad the fittin' of't all 'peared ter be.

Them boards wouldn't meet, like they wuz cut too short,
An' all them ornimints jes' seemed ter pull erpart.
T'war plum' full o' cracks from end ter end,
An' Bill's stiddy job wer' ter mend and mend.

Then a little later on when the winter come,
An' the winds got ter whistlin' 'roun Bill's hum,
Bill done a thing thet he'd never done afore,
He los' his reppertashun for Bill jes' swore.

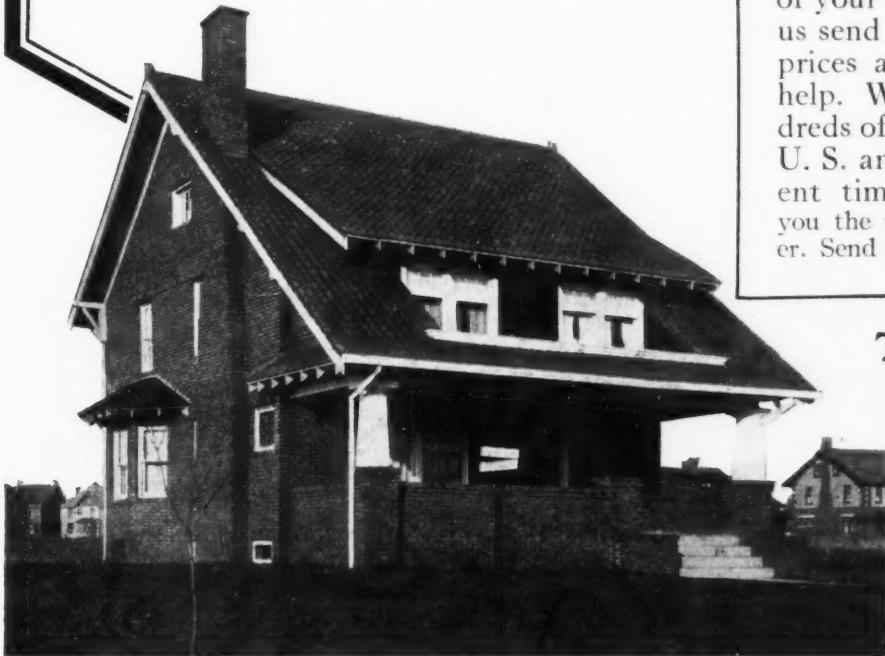
He couldn't keep her warm an' he didn't know why
Fer he burnt all the wood an' coal he c'd buy,
Swore fire wouldn't warm the walls ner the floors,
Trouble wuz, Bill tried ter heat ther hull outdoors.

One night 'bout dark with ther win' er blowin' strong,
Bill did git her hot but it wern't fer very long,
For in 'bout ten minutes, if you'll bleeve me,
Er' little pile er' ashes were all ther' wuz ter see.

MANY of our spring build-
ing clients will want a
material that is at once dis-
tinctive, economical and adap-
table to their building needs.

Belden Brick are made in all
colors, shapes and sizes and we
are convinced that Belden
Brick are the greatest value you
can buy and that houses built
of this material are easily with-
in reach of your community.

Mr. Builder: Tell us the nature
of your spring building and let
us send you sample brick with
prices and valuable building
help. We have dealers in hun-
dreds of cities and towns in the
U. S. and Canada at the pres-
ent time and will gladly tell
you the name of your nearest deal-
er. Send the attached coupon today.



The Belden Brick Company

Established 1885

Canton, - Ohio

House built by
Chas. R. Kumpf, Contractor and Builder

TEAR OFF AND MAIL THIS COUPON

Belden Brick Co., Canton, Ohio.

Gentlemen:—We are favorable to the use of brick for many pur-
poses and would like to know more about your product. We are
figuring on building (use this line if anything definite)

NAME

CITY

STATE

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

A Boost for Zinc-Coated and Cut Shingle Nails

The use of shingle roofs in Wisconsin has not been condemned, because there has not been found sufficient hazard in the building industry where wood roofs have been used, according to the pamphlet issued for Fire Prevention Day by the Wisconsin state fire marshal.

Instead of prescribing any fireproof material for use as roofing, the pamphlet states that a large item of the annual fire loss is not caused by roofing, but by defective chimneys. The pamphlet gives a detailed account of precautions for the owner of buildings.

"The agitation against the use of wood shingles has been due to the failure of the lumbermen to insist that roofs be properly laid," declared Howard F. Weiss, director of the Forest Products Laboratory, in referring to the objections raised against wood shingles in the pamphlets issued in some other states for Fire Prevention Day. Said Mr. Weiss:

"I believe that the ordinance against the use of wood shingles will be modified as soon as lumbermen make greater use of fire-retardent paints and also demand that roofs be laid according to their instructions. The trade is beginning to realize this fact. The shingle agency of the West Coast Lumbermen's Association is taking a keen interest in the way roofs are laid. The dealers insist that the shingles be laid properly. Naturally a much superior roofing is the result. They ought to follow up this step by applying some method of making the shingles fire-resistant."

Mr. Weiss stated further that experiments at the Laboratory had shown that the resistance which shingles might offer to fire could be greatly increased.

Annual Exhibit of Evening Work at Pratt Institute

Wednesday evening, March 7, will be observed as "Visitors' Night" in the School of Science and Technology of Pratt Institute, Brooklyn. From eight to nine o'clock all the shops, laboratories and drawing rooms of the school will be open to the public, giving an opportunity to all persons interested in industrial education to observe the students at work in the various courses and to inspect the results and methods as well as the equipment and general facilities of the Institute for conducting this kind of industrial training.

The School of Science and Technology provides instruction in industrial electricity, technical chemistry, mechanical drawing and machine design, strength of materials, stationary engineering and power plant machinery, machine work and tool making, forge work, carpentry and building, pattern making, sheet metal work, foundry practice, plumbing and trade teaching for the training of skilled workmen who desire to prepare themselves for the teaching of their trades.

This school is now giving instruction in its evening courses to more than eleven hundred men who are regularly employed in various vocations and who use these courses as a means to prepare themselves for more effective service.

Experiments Show Relative Durability of Wood Paving Blocks

Inspection of an experimental piece of treated wood-block pavement, laid in 1906, by the City of Minneapolis in co-operation with the Forest Service and various lumber manufacturers and wood-preserving companies, has revealed the fact that white birch is wearing as well as long-leaf pine, and that sapwood of timber, if well treated with creosote oil, is practically as durable as heartwood. Data thus far recorded and analyzed at the Forest Products Laboratory at Madison, Wis., indicate that in order of wear the six species used in the experiment rank as follows: (1) White birch and long-leaf

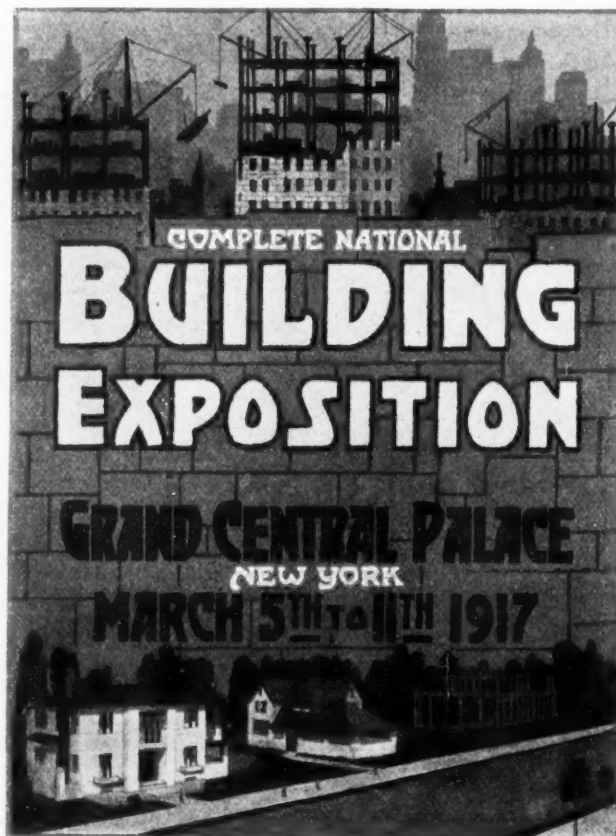
pine; (2) Norway pine; (3) tamarack and eastern hemlock; and (4) western larch. Douglas fir blocks were also included in the experiment but were laid at a later date than the other species and no definite conclusions in regard to their relative durability can be drawn at this time. Relative efficiency of these woods depends both on wear and cost and therefore the order of efficiency is perhaps different from that stated above. All have given good service for ten years.

When this pavement was laid the traffic on it was principally steel-tired, horse-drawn trucks, with few motor vehicles. It now consists of light and heavy motor vehicles with only a few horse-drawn trucks. For this reason it is probable that the pavement is deteriorating less rapidly than when first laid.

Every Line to be Represented at New York Show

Educational in every feature, the National Complete Building Exposition, to be held in the Grand Central Palace, New York, March 5-11, will be by far the most ambitious demonstration of up-to-date building, equipment and furnishing ever attempted in the United States. It will be backed by the best expert knowledge of the country and will exert a strong appeal to every man who is a prospective builder. Boiled down, the exposition will be a great big, compelling argument for better building of whatever character.

This exposition will be but a furtherance of the movement for better building, which was initiated in the First American Complete Building Show, held in Cleveland last February. The effect of the Cleveland show has been felt emphatically the past season throughout the Middle West, and particularly Ohio, from which the greater percentage of the attendance came. In that territory building in general the past summer was of higher class than ever before; higher grade materials and more modern equipment were used and the gross investment was greater than in any preceding year.



This is a Reproduction, Greatly Reduced in Size, of the Beautiful Colored Poster Announcing the Complete National Building Exposition.



A HY-TEX COTTAGE

¶ Mr. Carpenter Builder, improve the looks of your home town by putting up houses like the one shown above. By doing so, you will not only *please* your clients because you increase their safety and comfort, and enhance the value of their property, but you will also become a *public* benefactor because you make your town more attractive.

Hy-tex
The Standard of Quality in Brick

¶ Put variety into your work by adding the natural color and beauty of brick to the walls you build. People in town will appreciate it, and you will have your reward in gaining a higher reputation as a builder.

¶ The pages of THE AMERICAN BUILDER will show you how easily it may be done. Ask your lumber dealer to look up Hy-tex Brick, and write us for catalog and booklets.

Hydraulic-Press Brick Company

Saint Louis

Branch Offices: Baltimore, Chicago, Cleveland, Davenport, DuBois, Pa., Indianapolis, Kansas City, Minneapolis, Omaha, Philadelphia, Roseville, O., Toledo, Washington

Largest Manufacturers of Face Brick in the World

The Man from the Lumber Yard

(Continued from page 54.)

Pork and vs Cream Puffs

Suppose my stenographer, who weighs 109 pounds, had a regular diet of pork and beans, and suppose that your John, who weighs over 200 pounds and has to handle several tons of lime and cement a day, had a regular diet of cream puffs, what would happen?

Michigan has had some rapidly building towns. In one of these is an up-to-the-minute builder. He has an excellent small organization. As you enter his office you see his bookkeeper-stenographer to the right, while his private office partitioned off by wallboard is in the far right-hand corner. Along the rear wall cut off by a railing, is a home-made table with as many chairs in front as he has out-side men.

I noticed several copies of the AMERICAN BUILDER with white pasters on the outside cover lying on the table. With the effrontery which almost all traveling men have, I went inside the enclosure and noticed that different names were written on these white slips.

When I got a chance to see this man he told me that he had every man read each issue and sign his name after doing so. Last June he had a rush job of cutting up a large factory room into several small finishing rooms which were to be dust-proof. Space was very valuable and the fire hazard must not be increased. Altho very resourceful he was up a stump

until one of his men called his attention to an ad of an expanded metal concern that gave him exactly what he wanted.

Pardonable Pride

While all of us on the editorial staff are never satisfied, we do put so much into the AMERICAN BUILDER that we feel a great pride when we chance to find the other building magazines on the desk with ours.

Information is given by pictures as well as by words. We believe in them. That is why we show twice as much original work as all other building magazines combined.

You can understand why there is a hesitancy in showing original work when you consider the fact that the cost of this work in our February issue was over \$1,000. It is one of the reasons why the AMERICAN BUILDER is so carefully and thoroly read and why it is kept on file by the progressive contractor.

Regardless of how well equipped he is with sketches, he may have a hard-to-please customer and find the design suiting his whim in one of his AMERICAN BUILDER books.

We are often surprised at the quickness of response from our readers, especially in regard to some labor-saving tool, machine or system. This indicates to us a lively interest in the good things presented in the advertising and editorial pages.

(Continued to page 112.)

Vaults Basements Cisterns Engine Pits

Can be made
positively water-
proof with Cer-
esit waterproof-
ing compound.



GERMAN SAVINGS BANK, DAVENPORT, IOWA
Archts., Clausen & Clausen; Contrs., W. M. Allen Sons & Co.

In this bank—close to the Mississippi River—Ceresit has enabled the safe use of the basement for storage of valuable papers, books, records, etc. This is simply one instance among thousands of the efficiency of Ceresit for making concrete structures of every kind permanently bone dry.

Ceresit Waterproofing Compound is a cream white paste that readily mixes with the water used to temper cement mortar, cement stucco or concrete. Wherever water is to be kept in or out, Ceresit can be depended upon for perfect and permanent results.

The March issue of The Ceresit Waterproofer is in the mail. If you did not get yours, send us your business card or write us on your letterhead and a copy will be mailed at once.

CERESIT WATERPROOFING CO.
910 Westminster Bldg. - - - Chicago

CWG Products

- Ceresit Waterproofing Compound
—A plastic paste for waterproofing concrete and cement.
 - Ceresitol
—A liquid, to be applied with a brush, for damp-proofing brick, cement blocks and porous stone without changing color.
 - C. W. Co. Damp-Proof Plaster Bond
—To be applied to interiors of exposed walls before plastering. Eliminates furring or lathing.
 - C. W. Co. Damp-Proof Coating
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—Gives concrete floors a permanent wearing surface and prevents dusting.
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of C. W. Co. Products gives condensed data, instructions and price lists—write for it.

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Contain Valuable Information and Data for You

We will be glad to send you a copy of each of these four books free. They contain tables, data, plans, etc., that will be a big help to you in your concrete work:

"Concrete Work Made Easy" contains valuable tables, giving quantities of material required for different forms of concrete construction.

"Medusa Waterproofing" shows the uses of this valuable waterproofing, its advantages, directions for use, typical installations, etc.

"Medusa White Portland Cement" tells you all about the original, pure white cement—how and where it has been successfully used—how it analyzes and tests. It gives you specifications and proportions for use with stucco on metal lath; stucco on brick, hollow tile or rough surfaces; stucco on concrete block, monolithic or smooth surfaces; and as a non-staining mortar for various purposes. It also shows the uses that this stainless cement has been put to for exteriors and interiors.

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These booklets are handsomely illustrated and we want every contractor and builder to have a set of them. Send for a set today. Fill in and mail the coupon. It's for your convenience.

The Sandusky Cement Company
Department L
Cleveland, Ohio, U. S. A.

The
Sandusky
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Cleveland, O.,
Dept. L

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I am particularly in-
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Address

There are many magazines you can't afford to squander time in reading. No man would work for Jones if he could secure a permanent position at 50 per cent more pay from Smith. Nor can any man afford to spend the time in reading any magazine if he could acquire twice the information in the same length of time from some other magazine.

The Cement Show

The tenth Cement Show was different, probably much better than any of its predecessors. As I tramped up one aisle and down another, and noted the efficiency of the labor-saving machines shown, I wished that I had with me the forty or fifty thousand pairs of eyes that look into mine every month thru our printed pages. What an education it would be—how it would speed up production—increase capacity, and add to the value of our readers.

The Cement Show is indeed an educator. But the Cement Show was different from that kingdom which is everywhere, being only in Chicago, and I doubt if 10 per cent of our readers were able to be present.

Chicago is a long way from the Panhandle of Texas and the Upper Peninsula of Michigan.

I was disconsolate until I remembered the regular monthly exposition of the best tools and material considered worthy of being presented to our readers.

In idle curiosity I counted over 350 products which were shown in our February issue. In the item of

concrete mixers alone there were about twenty different makes.

Therefore, dear sir, if you would know more, light your "perfecto" and search our pages for those things of prime interest. Write your name on your letter-head under your expressed wish for information, place it in a properly addressed envelope, affix a small oblong paster which your Uncle at Washington supplies for two cents and await results.

These are great times. The world will move much faster in the next ten than the last ten years. It behooves everyone to get busy for the time of the beginnings of big things.

Sincerely,

THE MAN FROM THE LUMBER YARD.



Industrial Housing

(Continued from page 69.)

now produce bad housing to produce good housing, and we must do it by bringing into control and co-operation with them the forces that believe in good housing and will gain from it, which are mainly the manufacturing and business interests that depend upon the efficient and happy workmen. This great change in housing methods will come, if it does come, from the substitution for exploitation and excessive return of the reasonable profits of business, from the transfer of housing from the field of speculation to that corre-

(Continued to page 114.)



You Take No Chance

YOUR choice of **Kellastone** (Imperishable Stucco) need not rest on what you think or what we say. Back of your selection of Kellastone are thousands of homes and buildings of all sorts throughout this country, many of them many years old and all today perfect in stucco as when they were first finished.

KELLASTONE
IMPERISHABLE STUCCO

is the one proven stucco. Almost unbelievably **elastic**, normal wall settling can not make it crack or check. It is **waterproof**, **fireproof** and **weather-proof**. Can be applied in freezing weather. Unaffected by heat or cold—a non-conductor, it will not expand or contract and is warmest in winter, the coolest in summer. It bonds perfectly to all building surfaces and is the most beautiful of all stuccos, giving a marvelous variety of unique color and surface effects. It can be applied by any plasterer.

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IT seems that some people still have the mistaken idea that North Carolina Pine is only a trade name which might be applied to any one of several different kinds of pine. And because of this mistake many contractors have been overlooking a lumber which, among all the less-expensive lumbers, best serves their purpose.

NORTH CAROLINA PINE

"The Wood Universal"

North Carolina Pine is the Loblolly—a short leaf pine, *totally different from all others*. And here is the big point to be remembered:

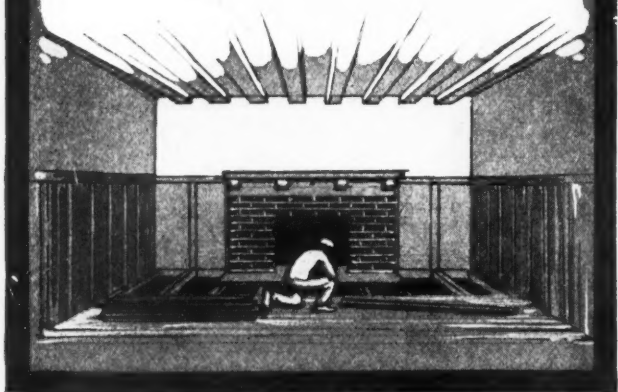
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North Carolina Pine Association

72 Bank of Commerce Building
Norfolk, Virginia



sponding to legitimate manufacturing. We shall then proceed in very much the same way that the manufacturer proceeds. We shall want to know the facts as to the nature and extent of the demand. We shall have definite aims as to the product. We shall use skill and experience and business methods. We shall back the enterprise with adequate capital, and count upon a fair rate of interest.

Nowhere in this country and probably nowhere in any other country which is related to our way of doing things, is the housing problem now being solved by ordinary unregulated speculative or commercial methods. These methods nearly always result in a considerable amount of bad housing and also, even in normal times, in a shortage of desirable low cost dwellings. In periods of industrial expansion, they result in what has been aptly called a "house famine" with all its attendant evils.

It would be comparatively easy, I think, to show that the larger part of low cost housing is not now good. Notwithstanding the splendid service being rendered in many directions, especially by such effective organizations as the National Housing Association, no forces are yet at work which are sufficiently strong, persistent, and extensive to successfully cope with the real housing problem. To my mind, however, a peculiar opportunity is now presented. Something relatively new has recently happened in this country. Employers of labor, not a few, but many, are having such great difficulty in getting and keeping employes, and they are so embarrassed by the new conditions and their great costs, that they are ready to consider any practicable proposition that will lessen their troubles. It is now easy to draw their attention to the poor character of much of the housing of wage earners and more especially to the utter inadequacy of the supply of small houses of suitable types available at rents which the wage earners can pay. It is true that some employers—far-sighted men—have had convictions on this subject for many years and a few have acted accordingly. It has been mainly for their own employes, however. The significance of the new awakening is that it is so widespread, that it embraces what might be called the whole of the business community and that it reaches from city to city, from one coast to the other.

From a recent study of conditions in four cities, I believe that there is today an opportunity for a substantial and permanent advance. The four cities investigated were Waterbury and Bridgeport, Conn., Kenosha, Wisconsin, and Akron, Ohio. In some respects the problems are similar for all these cities; in other respects, they are local and peculiar.

In all cases the local organization resolved that before plunging in and building something, they would find out by careful investigation the extent and character of the demand for houses, and also the experience of other places in meeting somewhat parallel condi-

(Continued to page 116.)



MacDonald Hotel, Edmonton, Alberta. Trimmed in "Beautiful **birch**" throughout

"Beautiful **birch**" for Beautiful Woodwork!

Give your customers the same trim used in the magnificent hotel shown above. "Beautiful **birch**" is what you might call a satisfaction-wood. It is good sound material to work with; stays where you put it; is hard and wears well and its beauty is such that every **birch** job means a dead sure booster for the man that did it. **birch** takes *light as well as dark* stains and comes out as nice as silk. And the price pleases everyone concerned.

*FREE: That you may know at first hand what a beautiful wood **birch** really is (in spite of its reasonable price) we shall gladly send you sample panels in many finishes, together with a fine illustrated booklet.*

The Northern Hemlock & Hardwood Manufacturers' Association

Offices, 201 F. R. A. Building - Oshkosh, Wisconsin

tions and requirements. The first step, it seemed to them, was a social and economic diagnosis—an analysis that would give them confidence in the prescription for immediate needs, and at the same time enable them to adopt measures that would be preventive in character and apply to meeting the situation in more normal times.

The recommendations submitted to these four cities have been so framed as to meet the actual housing needs of workingmen, on terms which their wages make possible. The proposals are not essentially new, and not in any sense radical. In fact, they follow conservative and well tried out schemes of other housing companies. Virtually everything recommended has been successfully executed elsewhere in this country for the same classes of workingmen, with the same income or even less. No one house or method is endorsed as the only one, altho the emphasis is put upon the single family, self-contained, detached house or cottage, as on the whole most desirable when possible. In addition to the single family house, detached, the recommendations include an endorsement of the single family house in groups; also of well arranged, well lighted apartments or flats. All these types have some advantages of economy of land cost or land improvement cost, or of house construction, and take into account the fact that different people have different tastes and preferences as well as different needs in housing, as in other matters. What is best depends

upon conditions and circumstances and the cost. These recommendations were, of course, only the first step in a constructive program. Every effort, however, was put forth to make it a definite and practicable step, and to suggest logical methods for following the matter promptly by action.

What has actually been accomplished so far? Briefly, the following may be said:

In Waterbury, two large manufacturing concerns, the Scovill Manufacturing Company and the American Brass Company, have begun operations and a considerable number of new houses of desirable types were completed and available last autumn. Furthermore, the attention of all the manufacturers of the city has been effectively drawn to the subject and through the publication of the report in the *Waterbury Republican*, as a Sunday supplement, public interest has been aroused and public opinion formed favorable to the energetic prosecution of the subject. No joint action, however, on the part of manufacturers or of business interests generally, has yet been secured, and it will be interesting to observe how much can be accomplished without it.

In Kenosha, the movement was begun by the Manufacturers' Association and had the approval and support from the start of all the business interests of the city. Altho the investigation was not taken up until May, the Kenosha House Building Company and the

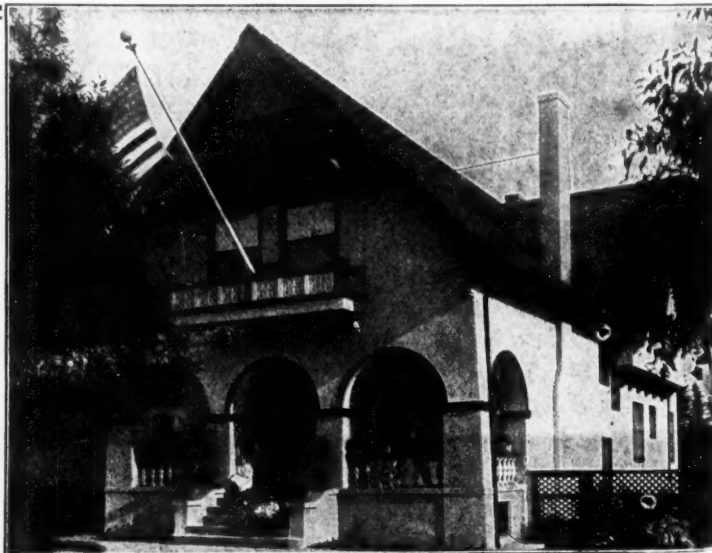
(Continued to page 118.)

Modern Homes at Less Cost

You can build the finest types of *strong, permanent, fireproof* structures at a decided saving of material and labor—by using Hy-Rib and Rib Lath.

These materials *eliminate all forms* for pouring cement—saving expense, labor cost and time of erection. Because of their extraordinary stiffness and rigidity, they *permit the wider spacing of studs and supports*, saving in the cost of studding and labor of installation.

Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc. They provide a more valuable building in every respect—and assure the greatest satisfaction to your customers.



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Rib Lath A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and will not crack or streak. Saves time, labor and material in erection.

Write for Hy-Rib Handbook, with specifications, tables, illustrations, etc. Every builder should have a copy. Address Hy-Rib and Lath Dept.

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We do everything possible to make installations of **CURTIS** Woodwork easy, accurate, quick and inexpensive.

1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"

Take, for instance, the stairway shown here. Curtis stairways are all the stairway material you would ordinarily receive *plus* a good part of the labor cost of fitting this material together and putting it in place. Risers and treads are cut to

exact size and numbered so that you know at once where each belongs. An accurate working plan does away with the possibility of mistake. Every bit of the work we do must be done sometime; we're simply saving you the trouble.

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Manufacturing and Distributing Plants at

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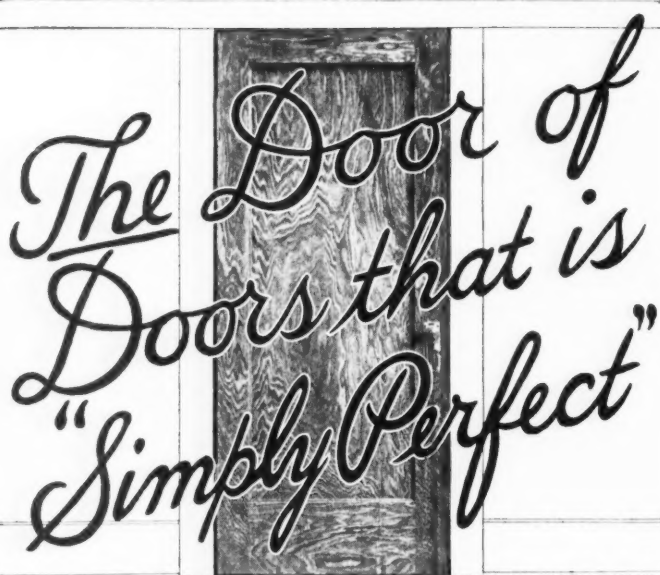
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The makers of CURTIS Woodwork guarantee complete satisfaction to its users.

"We're not satisfied unless you are."

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Wedge Dowel Construction—all White Pine Core—the wider choice of distinctive designs—the unmatched range and the rare beauty of its veneers—have made the Morgan Line the favorite in the Field which it developed and now dominates.

To the Contractor Morgan Advantages are important because Morgan Quality and Morgan Service is established. Consequently whenever you specify MORGAN you specify a Door which, in the estimation of the homebuilder, "is simply perfect."



Are your kind—the kind you can afford to recommend

And they come to you under an Iron-Clad Guarantee that precludes "come-backs," "trouble" or dissatisfied customers."

Get the Morgan Mill Work Data Book

Familiarize yourself with the Morgan Family of Mill Products. It will pay you to know WHERE your kind of Doors can be had. Your dealer can supply you with all Morgan products without delay.

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Exhibits of finished Morgan Model
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Ask for list.



Morgan Doors
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Kenosha Homes Company were successfully organized in July. Land was purchased and building begun early in August. Plans have been made for the construction of at least 400 single family houses. Some are already completed and occupied and a new house is started every day. So far the operation is confined to the detached cottage type of five or six rooms. The price of the first houses on forty-foot lots which had already been laid out when purchased will be under \$2,500. It is hoped that later operations will make possible houses at about \$2,000, on a minimum of fifty-foot lots.

I know nothing better nor more promising than what has been done in Kenosha during the last three months. Some forces are now being used there for good housing that formerly built houses less good, or were relatively inactive in adding to the supply of houses. These forces have been stimulated, directed and helped by the effective organization of the manufacturing, business and financial interests of the city. The work is on a good business basis, yielding a good return. It places no dependence upon philanthropy and charity. It is being done by the entire community for the entire community. It is free from any taint of paternalism or embarrassing relation of employer and employe. It is permanent and intends to occupy the field so long as there is any need for it. It is of inestimable benefit to the four parties most affected, namely, the employers of labor, the people of the city as a whole, the legitimate real estate operators and builders, and above all, to the wage earner himself. With slight modifications to meet local conditions, the method of Kenosha is, I believe, capable of wide application.

The Bridgeport story is just begun. After the presentation of the report entitled "More Houses for Bridgeport" and the careful consideration of the whole matter by the Chamber of Commerce, the Housing Company was incorporated, with a capital of a million dollars. A capable manager has been engaged by the company to give all his time to the problem, offices have been opened, and negotiations are now under way for the acquisition of land and the construction of buildings. If successful, I believe that the movement in Bridgeport will be particularly instructive and significant. Its operations are bound to be large, because the demand is so great, and the conditions that the company has been organized to combat are typical of a modern industrial city in the throes of very rapid growth.

In conclusion, may I ask, is not the problem of housing, "How are we going to invest twenty-five per cent of the workingmen's wages, a very large sum of money, so as to get the maximum return for him, for his employer, for the legitimate building interests, and for the community at large?" The way followed at Waterbury, Kenosha, Bridgeport, and now being taken

(Continued to page 120.)

*"The Carpenter could do more
with it, and with less effort,
than with any other wood."*

United States Government report on _____

No experienced carpenter need be told that the report from which the above quotation was taken was on

WHITE PINE

White Pine has always been the preferred wood with carpenters because it works easier, and lasts longer and "stays put" better in the exposed covering of a house, than any other wood.

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up at Akron is, I believe, at least promising good results. It is worthy of careful watching.

The other and final question is, "Who is responsible for action?" That, after all, is our real problem, and the reason that the housing movement halts. I do not think that we can prove by logic that the employers are responsible, altho there is no doubt in my mind that it is to their own interests to act promptly and on a large scale. A prominent secretary of a board of trade, in an address on "Industrial Development," delivered at Cleveland, said: "Ample facilities for comfortable living and pleasure constitute the only true basis for the upbuilding of satisfactory working forces. It is just as much the duty of the commercial organization to see that such facilities are furnished as it is to work for the location of the creation of industries. The responsibility of reasonable co-operation along this line of work is very great."

Advance in this housing matter will probably come, as it has come in other matters hitherto. Vision creates responsibility, on penalty of losing the vision. Men and women will see the controlling importance of this subject, and the way to promote it. They will apply themselves to the task, and gradually we shall solve, mainly on economic lines, I believe, the problems of industrial housing, and in so doing we shall make one of the greatest contributions to industrial efficiency and to the welfare of the wage earner.

Stucco Finish for Hollow Tile

(Continued from page 67.)

MARBLE FINISH—For white marble-like finish, use white cement and fine white sand or marble dust.

Ordinary cement-color finish is obtained by using one part of cement to two parts clean, sharp sand. If it is desired to lighten this color some, it can be done by using white sand or marble dust. When a darker tone is desired, lamp black may be added to the cement and sand. As a matter of fact, almost any color desired can be secured by mixing with the cement and sand the necessary pigments. In the use of coloring material, however, be sure to use only the best mineral pigments, otherwise the work is liable to fade in whole or in part, show streaky or become spotted.

Careful mixing of the plaster is as essential as good workmanship, and the combination of the two will produce a wall surface which is simple in treatment, pleasing in appearance, and inexpensive when compared with other exterior wall finishes. The stucco cannot be applied with safety during freezing weather, and in warm weather precautions must be taken to prevent the stucco drying out too quickly. This may be prevented by spraying the walls once or twice a day for several days after applying the finish coat. Stucco-

(Continued to page 122.)

WATERPROOF PLASTERGON TREATED WOOD FIBRE WALL-BOARD

(See how this 10-foot panel stands straight without bending. Send for actual photo.)

Reduces Cost

Verify for yourself the reduced cost of using Plastergon in time, labor and materials. We will give you the names of many customers to whom you can refer. Plastergon costs less than lath and plaster. Saves \$4 to \$6 per thousand square feet over other wall boards by coming sized, ready to be immediately applied and painted. Warp-twist-and water-proof.

Be safe. Use Plastergon. Our users say Plastergon has no equal at any price.

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"I find Plastergon to be better than lath and plaster in every respect. Its use saved me several hundred dollars in time and labor."

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Samples and our "Contractors' Practical Working Guide" sent free. Send the name of your Lumber or Builders' Supply Dealer. Write today.

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ANY MONTH						
SUN	MON	TUE	WED	THU	FRI	SAT
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3 Weeks quicker than Plaster


Here's what one builder writes from actual experience:

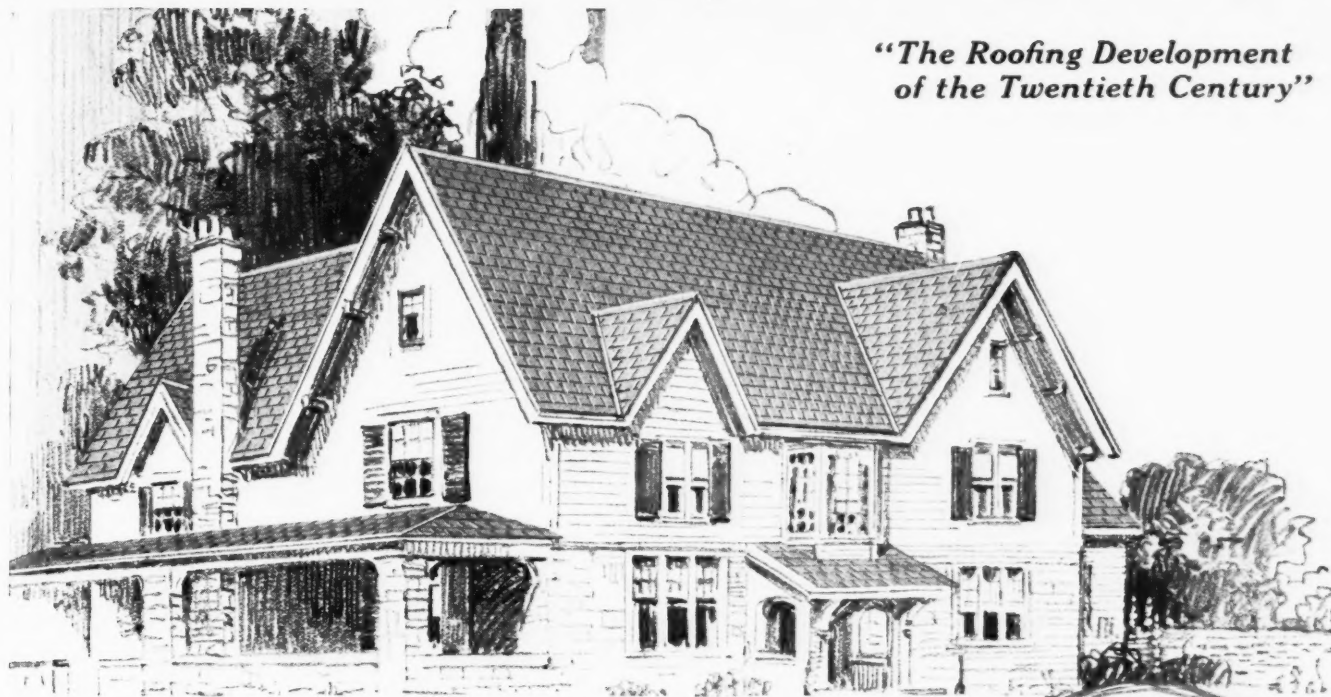
"The writer effected a good sale last week — found our customer ready for the masons which meant carpentry would have to drop off until bath and bedroom adjoining were lathed and plastered. He was delighted when told about Ceil Board and gave the order then and there for both rooms. The carpenter did not have to drop off, he was saved all the dirt which accompanies plastering and everybody was made happy by Ceil Board."

(Signed) Carter Bros., Picton, Ont.

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of the Twentieth Century"*

"I took my town by storm

—when I became known as the Neponset Carpenter. My first roof of Neponset Twin Shingles put me 'in right' with all the property owners in my community. I wasn't told directly, but I knew I had made a big hit. I wasn't surprised, because I can't understand a person who wouldn't want his home roofed with these beautiful



The Neponset Carpenter

NEPONSET TWIN SHINGLES

(Patent applied for)



Look for this trademark on all Shingles, Roll Roofings, Wall Boards and Building Papers. There is one meeting every requirement and purse—all guaranteed by us.

"Some folks call them 'The Roofing Development of the Twentieth Century'—and that expression just about fills the bill.

"You see, Neponset Twin Shingles have earned the right to this title through sheer merit. They are beautiful to look at—their red and green colors harmonize with any surroundings or architectural plan. Five layers, six processes guarantee longest wear to these shingles. Their twin shape halves cost of laying—25% less nails required. Approved by the National Board of Fire Underwriters. There are three types of Neponset Shingles for every requirement and pocket-book. Also other Neponset Building Products that are mighty popular.

"Here's the coupon I mailed. Mail it today—and get started in a profitable business."

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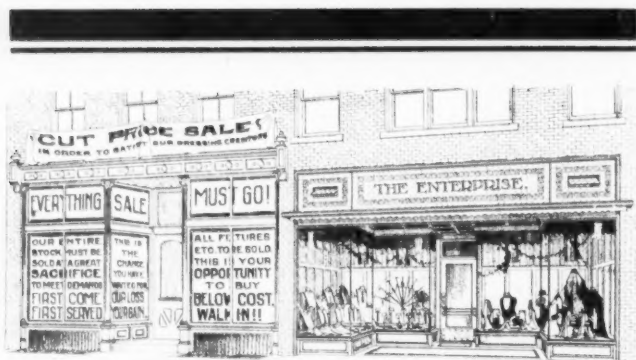
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Our Catalog "H" will show You how to build a new Kawneer Store Front.

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56,000 Kawneer Store Fronts, installed over the entire area of the United States, are *your* assurance, that we have successfully developed a *store front construction of merit*.

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Kawneer Mfg. Co.
Niles, Mich.

COUPON

Please send me Catalog "H".

finish may be made waterproof by the addition of one of the many damp-proof compounds now on the market.

In preparing plaster for stucco finish, the cement and sand should be thoroly mixed when dry, then the water may be added as plaster is needed. It is inadvisable to mix at a time more than can be used inside of thirty minutes, for if a larger batch is mixed it is liable to take on an initial set, when it becomes useless for the purpose of plastering, re-tempered cement mortar being hard to work as well as unreliable.

As a general rule, slow setting cements are best, as there is more time for the working of the surface into final shape, and they will ultimately set as hard or harder than quick setting cements. Before the scratch coat is applied the hollow tile must be well sprayed with water, and care must be exercised to keep the edges of the plaster wet and the face damp until finished, to keep from drying out too quickly. Cement worked during warm weather sets much quicker than it does in cold weather. On the other hand, cement mixed with cold water in cold weather and in a damp place may take from ten to twenty days to get moderately hard.

Why Hesitate About Exterior Plastering?

One of the peculiar things about the stuccoing of exterior walls of hollow tile is the fact that many masons who would undertake the interior plastering of any building are rather diffident about accepting the exterior plastering of a building. Because of the fact that it is rather unusual within their practice, they seem reluctant even to estimate on the exterior work, and when they do their figures reflect their reluctance, as well as the lack of definite data to figure from.

Yet, when it comes down to actual practice, there is little or no difference between interior plastering and exterior plastering, so far as the labor is concerned. Hollow-tile blocks are scored with dovetail grooves on all four sides, so that in form and appearance both the inside and the outside of a wall are alike. It stands to reason, therefore, that it is no more difficult to apply mortar to the outside surface than it is to the inside. It is simply the disinclination to attempt something new which deters some masons from making a profit by advocating stucco finish for the walls of residences and other small buildings.

But there are some differences between the plastering of interior and exterior wall surfaces. The staging to work from will be different for the outside work, particularly if the building is a tall one. For outside work the staging used by bricklayers will perhaps be the most suitable.

Then, instead of the regulation scratch, brown and hard finish coats of the interior, there are only two, scratch and finish on the outside, and these two coats are of cement, while inside the building lime mortar is

(Continued to page 124.)

BEAVER BOARD

FOR BETTER WALLS & CEILINGS



You can't expect Beaver Board results unless this trade-mark is on the back of the board you buy.



Learn Beaver Boarding

An Attractive Trade that Offers Big Opportunities to Wide-awake Hustling Men

Here's your opportunity to enter a new field and build up a business of your own. No money required—only brains, industry and ambition. This new trade—Beaver Boarding—means congenial, interesting inside work the year around. No lay-offs. No off-season.

What Beaver Boarding Is

The term "Beaver Boarding" means the complete construction of walls and ceilings—including their decoration—from the most modern of all wall and ceiling materials—Beaver Board.

The application of Beaver Board is so easy that any man can do a successful job by merely following the printed directions on the back of the panels. But the art of Beaver Boarding lies in the planning and designing of the rooms and their decoration and in skillfully working out such designs.

Beaver Board is used as much for remodeling and repairing as it is for new work. There is no type of building, new or old, large or small, which does not offer opportunities for the well-trained Beaver Board man.

One Job Leads to Another

A good Beaver Board room is completed so quickly and is so satisfying both in appearance and in service, that one job always leads to another. If you are thorough and conscientious in your work, your customers will be your biggest boosters.

Free Design Service

Our design and decoration bureau will help plan difficult or important jobs. This valuable service costs you nothing. The Beaver Board craftsman also receives valuable co-operation of Beaver Board dealers and representatives in helping him build up a lively profitable business.

THE BEAVER BOARD COMPANIES
133 Beaver Road Buffalo, N. Y.

Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City and San Francisco.
Manufacturers also of Beaver Greenboard, Beaver Blackboard and Beaverbilt Utilities.

COUPON

The Beaver Board Companies
133 Beaver Road, Buffalo, N. Y.

With the understanding that I am not to be asked to invest money, please send me full particulars about your special service to carpenters and contractors.

Name.....

Occupation.....

Address.....

Town..... State.....

generally used. In view of the fact that lime putty is mixed with the cement mortar for the scratch coat, however, it butters just about as freely, and takes no longer to apply.

The Cost of Stucco Work

When it comes to the matter of costs, there is not much difference between the price for inside and for outside work. For similar kinds of work, the amount of materials will be about the same. The cost of labor applying stucco will perhaps be slightly higher than for two-coat work inside, but about equal to the cost of three-coat work. The following data will prove useful in helping determine the cost of stucco work.

One bushel of Portland cement and three bushels of sand will cover 5 square yards of hollow tile surface 1 inch thick. It will cover 6 square yards of surface $\frac{3}{4}$ inch thick, and 8 square yards of surface $\frac{1}{2}$ inch thick.

One bushel of cement and two bushels of sand will cover $3\frac{1}{2}$ square yards of hollow tile surface 1 inch thick. It will cover $4\frac{1}{2}$ yards $\frac{3}{4}$ inch thick, and $6\frac{3}{4}$ square yards $\frac{1}{2}$ inch thick.

One bushel of cement and one bushel of sand will cover $2\frac{1}{4}$ square yards of hollow tile surface 1 inch thick. It will cover 3 square yards of $\frac{3}{4}$ inch thick, and $4\frac{1}{2}$ square yards $\frac{1}{2}$ inch thick.

One bushel of pebbles will cover about 4 square yards of surface when used for pebble-dash.

For the scratch coat one bushel of lime putty will be required for each ten bushels of mortar. But lime putty is largely water, so that it would not require a

bushel of lime for this purpose. A peculiarity of lime in slacking is that it increases in volume from two and a half to three and a half times that of the original lime, the increase of bulk being proportional to the purity of the limestone. For each ten bushels of mortar, therefore, only one-third bushel of lime will be required.

From the foregoing data any one can very quickly estimate the materials required for stucco finishes of any kind. There remains now only the labor to be considered. This is not so simple a matter to estimate as the materials, for labor is the unknown quantity in estimating building work. The trouble is no two men are just alike in performances. One might be slow but thoro, another a quick worker but not so skilled a workman. In the estimating of work neither the slow nor the swift workman should be taken as a standard to judge by, but an average of what amount a number of workmen would do is the best yardstick to measure by.

An average day's work for plasterer and helper applying scratch coat to hollow tile walls may be taken as 75 square yards. The openings to be counted as surfaces. An equal amount of surface can be covered by a plasterer and helper with rough cast or sand finish providing there are not an unusual number of openings, corners, angles, water-table or other breaks to work around. If the wall surface is cut up to an

(Continued to page 126.)

The Virtues of the best Roofing Materials are combined in **Keystone Copper Steel TERNE PLATES**

Lasting, substantial service, reasonable cost, exemption from roofing worries, and absolute protection from fire and weather are sufficient reasons for demanding KEYSTONE Copper Steel Roofing Tin.

KEYSTONE Copper Steel Roofing Tin is highest in quality and most satisfactory in service. Grades up to 40 pounds coating. Look for the Keystone stamp in addition to brand. Our booklet "Copper—Its Effect upon Steel for Roofing Tin" is valuable to you. Send for it.



APOLLO-KEYSTONE Galvanized Sheets are unequalled for Cornices, Skylights, Gutters, and all forms of exposed sheet metal work. We also manufacture Formed Roofing and Siding Products, Black Sheets, etc. When Copper Steel is used, the Keystone is added to brand.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



What are YOU Getting Out of the Tremendous Wall Board Business?

WALL board is being used more and more—everywhere. The demand for it is increasing tremendously. And the up-to-the-minute carpenter is beginning to regard wall board installation work as much a part of his business as any other carpentering job.

Many carpenters report that numbers of their customers absolutely insist on wall board for their walls and ceilings. Besides, hundreds of thousands of people know about wall board and are interested in it. A word from the carpenter would clinch for him this business in his neighborhood.

The wall board business is profitable. YOU ought to be in on these profits. You ought to get in before your competitor beats you to it. But the only way to go into wall board RIGHT is to use the highest-quality board—the board that is made good to make good. A poor board won't do. A fairly good board won't do! If your board isn't the best, you will only stir up customers' dissatisfaction and hurt your reputation.

Learn about wall board—now. Get all the facts. Then get the board you learn is absolutely dependable, and "go to it" for a permanent, steady business that will keep on growing of itself and add a substantial amount of money to your income every year.

Read over the worth-while qualities claimed by other manufacturers for their wall boards. Then get into your mind the FACT that many of those qualities were ORIGINATED and ACTUALLY ACHIEVED by the Upson Company.

Here are some of the Upson improvements and innovations first ridiculed by other wall board makers and since poorly imitated:

As you and everybody else know, an imitation does not have behind it the brains and skill that produced the original. It does not have the QUALITY! An easy way to PROVE it is to compare the PERFORMANCE of wall boards.

UPSON PROCESSED BOARD HAS THE UNMATCHED RECORD. WE BELIEVE, OF NOT ONE COMPLAINT TO THE 2,000,000 FEET SOLD AND USED.

It is used to line the walls and ceilings of some of the finest edifices in the country, and in the most modest buildings, too. It is indorsed by the most experienced carpenters and builders—whose prejudice against the many unfit wall boards you well know. It is consistently specified by many prominent architects. It has STANDARDIZED wall board—and won recognition for it among highest building authorities.

YOU CAN VERIFY EVERY ONE OF THESE FACTS. Simply write us for full information and PROOF.

We also shall send you samples of Upson Board. Test them against every other board. See for yourself how Upson Board is MADE GOOD TO MAKE GOOD. COMPARISON has sold more Upson Board than all the advertising we have ever done.

Let us show you how to build up a permanent, big-paying wall board business. WRITE US TO-DAY. It is too profitable an opportunity for any carpenter to overlook.

THE UPSON COMPANY, Fiber Board Authorities
51 UPSON POINT, LOCKPORT, N. Y.

The First hard, stiff, wood-like board.

The First uniformly dependable board.

The First 4-ply, 5-ply and 6-ply board.

The First board to LOOK like lumber and WORK like lumber.

The First board to be KILN CURED and genuinely WATERPROOFED.

The First board to be SURFACE-FILLED — for perfect painting surface and economy. No wax or paraffine in it, as with some imitations.

The First board with a smooth, lintless surface, practically free from lumps, bumps, fuzz.

The First to make a stock board 64" in width. **The First** to stamp the back of each panel with condensed directions.

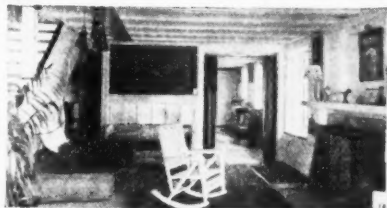
The First to originate a DISTINCTIVE CONSTRUCTION having two light colored faces and a COLORED CENTER.

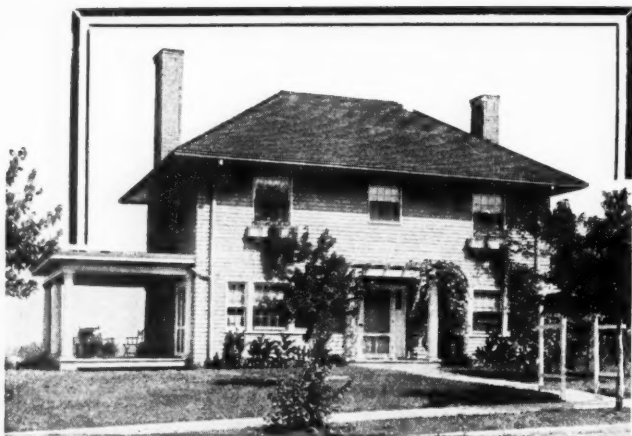
CAUTION!

Do not be deceived by other boards made to imitate Upson Board's appearance.

Look for the Blue Center

The construction of Upson Board has been imitated repeatedly, but the United States Courts have enjoined any other wall board manufacturer from making a board with two light colored faces and a blue center. The distinctive Upson construction with its famous BLUE CENTER is for your PROTECTION.





This home in Cincinnati is one of several hundred in that locality covered with "CREO-DIPT" Stained Shingles on roof and side walls. They all possess individuality.

WE are responsible for both quality of shingles and even stains. You are saved the annoyance of buying shingles from one dealer and stains from another, and overseeing the work on the job, **if you specify**

"CREO-DIPT" STAINED SHINGLES

17 Grades—16, 18, 24-inch—30 Colors

They are preserved in creosote and stained any color desired. Our process drives the preserving stain into the pores of the wood. They handle easily—without waste; they cannot curl, rot or fade out in streaks.

Write for Book of Homes and Sample Colors on wood. Ask about "CREO-DIPT" Thatched Roofs.

CREO-DIPT CO., Inc.,
Standard Stained Shingle Co.

1028 Oliver Street

North Tonawanda - [New York

Factory in Chicago for the West



"They Come Bundled Ready to Lay Without Waste"

unusual extent, a less allowance for a day's work must be made.

Pebble-dash finish is in reality three-coat work; scratch, sand and pebble finish; consequently an extra allowance must be made for it. In applying the second coat and pebble dash, a plasterer and helper will average about 40 square yards per day.

It will be seen from the foregoing statements that stucco finish is neither difficult to apply nor expensive compared with inside plaster work, or with other kinds of outside finish; and it is to be hoped the building trades will welcome more and more this simple finish, as the beauty and economy are more generally realized.



Factory Design

(Continued from page 81.)

10,880 pounds, there is no question as to the safety of the 6-inch column. In fact a much smaller column could be used if desired.

"The columns in the first story of the factory carry the load from those of the top floor in addition to the load on that floor. Since the general framing plan of the floors is the same as that of the roof, each column receives its load from the girders and beams as described above for the top floor members. Remembering that the floor loads are 135 pounds per square foot as used in our previous talk, we obtain the amounts to be brought to the column cap by the girders and beams from the detail of that talk. An examination of Fig. 12A (see Talk No. 55) shows that these columns really support a floor area 16 feet by 17 feet in size and loaded with 135 pounds per square foot of area, or 36,720 pounds. This same plan might have been used in finding the loads from the roof. Adding the 10,880 pounds from the column above, we have $36,720 + 10,880 = 47,600$ pounds as the total load to be carried by each of these columns on the first floor.

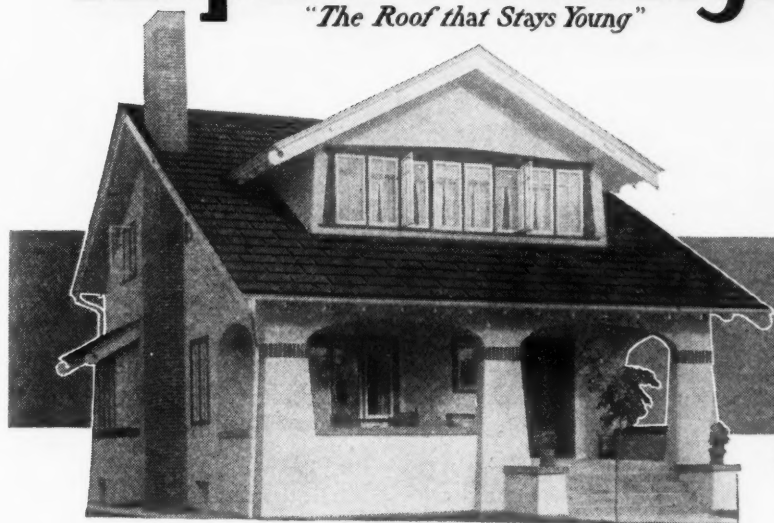
"Again, we may assume a size and thickness of metal and repeat the Rankine formula calculation as above. It will not be necessary in this particular case as we can see that the 6-inch column $\frac{3}{4}$ -inch in thickness, which we tried above is also amply strong for use on the first floor of the building. In other words, we see that the 64,050 pounds found above as the strength of the 6-inch column is much larger than our load of 47,600 pounds.

"If we use cast iron posts in the basement of this building, the load on each one of these would be equal to that on the column above it increased by the load on a panel of floor located around the top of the post in question. The load from the columns above the post will be 47,600 pounds, while the load from one panel of floor as figured above is 36,720 pounds. The total load on a post will be 84,320 pounds. The length of these basement posts as shown by Fig. 12B is roughly 10 feet.

(Continued to page 128.)

Asphalt Shingles

"The Roof that Stays Young"



CONTRACTORS and Builders find in *Asphalt Shingles* the kind of roofing that gives 100% *plus* of service to the house owner, with a beauty that strikingly enhances the house. And this at a price no greater than a common roofing.

Within the same cost estimate you can specify or use *Asphalt Shingles* and have a roofing that will *stay young* and that will not crack, lose its beautiful coloring, or warp. One of its handsome colors would harmonize artistically with the shade of the other building materials you use.

Our National Advertising Helps You

We are making the home building public still better acquainted with Asphalt Shingles through broad, national publicity. This helps you. You can work in harmony with it to give your customers greater value for every roofing dollar they spend. You can give them a roofing that will put additional tone into the outside appearance of the house without a cent of extra expense.

In all of our advertising we always refer the house owner to his Contractor, Builder or Dealer regarding Asphalt Shingles.

Asphalt Shingle Publicity Bureau, 955 Marquette Building, Chicago

"Filling in the Rankine equation for a 6-inch column $\frac{3}{4}$ -inch thick and 10 feet long, we have

$$3.14 \frac{6^2 - 4\frac{1}{2}^2}{4} \times 10,000$$

$$1 + \frac{1}{6,400} \times \frac{(10 \times 12)^2}{(6^2 + 4\frac{1}{2}^2)}$$

$$16$$

Solving, we have

$$\frac{12.3 \times 10,000}{1 + .64} = 75,000 \text{ pounds.}$$

"Thus it is seen that the allowable load for this column is smaller than the load to be carried.

"We will try a 7-inch diameter post $\frac{3}{4}$ -inch thick.

$$3.14 \frac{7^2 - 5\frac{1}{2}^2}{4} \times 10,000$$

$$1 + \frac{1}{6,400} \times \frac{(10 \times 12)^2}{(7^2 + 5\frac{1}{2}^2)}$$

$$16$$

Solving,

$$\frac{14.7 \times 10,000}{1 + .45} = 101,400 \text{ pounds.}$$

It is seen that the strength of the 7-inch post $\frac{3}{4}$ -inch

in thickness is more than enough to carry our load of 84,320 pounds.

"Next time," said the Boss, "we will see about figuring the footings and foundations necessary to carry our loads."



Dry Kilns

(Continued from page 91.)

near the outer walls so that it will heat the rising column of air. The temperature is controlled by a thermostat which actuates a valve on the main steam line.

An auxiliary steam spray, M, is provided for use at very high temperatures. The gutter, C, conducts the spray water back to the pump, where it is recirculated thru the sprays. The auxiliary heating coils JJ are provided to maintain the temperature of the column of air, but they may be omitted. G is a pipe condenser which is used near the end of the drying operation. The baffle K diverts the air and also protects the under layers of lumber from direct action of the steam pipes.

The construction of a single track kiln may be represented by extending the line E upward to represent the outer wall. The double track kiln may be modified by placing a set of baffles and a flue along the outer walls and moving the heating system to the center, in which case the lumber will be piled so that the stickers will slope downward from the center to the sides.

For Walls That Last

Plaster on Berger's Expanded Metal Lath

BY plastering the walls and ceilings of the buildings you erect with Berger's Expanded Metal Lath, safety and permanency are assured.

Building owners will appreciate the following important advantages offered by Berger's Expanded Metal Lath:

The plaster is reinforced over the entire surface—impossible for it to crack or fall off; does not absorb moisture, hence cannot swell, warp or stain the plaster; fire resistive, greatly adding to the protection of the building; sanitary; decorations can be applied immediately after the plaster is dry; rats or mice cannot make holes thru the walls; sound proof; insurance rates will be reduced; and maintenance costs practically eliminated.

The small diamond-shaped meshes allow a perfect "key", making plastering easy and completely imbedding the lath in the plaster.

Sheets 8 feet long and 18 and 24 inches wide.

Send for Metal Lath Booklet F. A. B.

The Berger Manufacturing Co.

Canton, Ohio

Branches: Boston New York Philadelphia
Chicago St. Louis Minneapolis
San Francisco Los Angeles
Export Dept.: Berger Bldg.,
New York City, U. S. A.



On Houses Like These—

The construction of which is described in detail in the editorial pages of this issue—

CON-SER-TEX CANVAS ROOFING

Is the ideal material to use for

The porch floors and roofs—on the sleeping balconies—as a lining for the gutters—as a covering for valleys and hips it's most satisfactory, a most durable flashing.

Con-ser-tex is a specially prepared heavy cotton fabric, chemically treated so that it will not crack, stretch, peel, shrink, rot or leak. It's easy to lay—saves time, money, trouble. It makes a neat, smooth, durable surface which will last as long as the house itself.

*Send for our booklet, "Roofing Facts and Figures."
It's FREE and gives interesting information about
the many uses of Con-ser-tex—and how you can
save money by using it.*

WILLIAM L. BARRELL COMPANY

8 Thomas Street, New York City

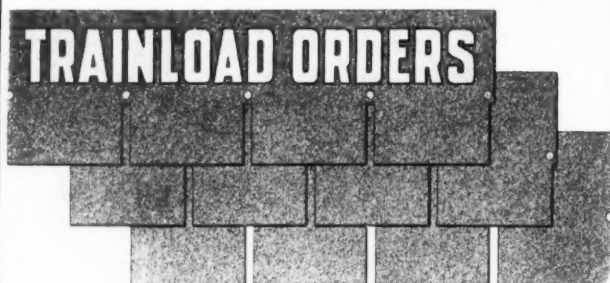
CHICAGO DISTRIBUTOR: Geo. B. Carpenter & Co., 430-40 Wells St.

CALIFORNIA DISTRIBUTORS

Waterhouse & Price Co., Los Angeles

The Pacific Building Material Co., San Francisco

TRAINLOAD ORDERS



REX STRIP SHINGLES

Made in Two Colors—Dark Red and Grayish Green

WITHIN forty-five days the leading lumber and building supply dealers in one city of less than 100,000 population ordered enough Rex Strip Shingles to cover 584 houses!—(16 squares per house).

There would be fifty-six carloads if we could ship all the orders at one time—a trainload of 840 tons!

We leave it to you if that is not Some Shingle Business from just one hustling little city!

The dealers mentioned believe in Rex Strip Shingles. They have found them profitable to handle. They order so heavily because the turnover is so rapid.

If you see Rex Strip Shingles you will appreciate their merits without being told about them. They cost less to buy, do the same work better, cost less to lay, and look as well as any Asphalt Shingle. They protect the building from fire, increase its value, and reduce insurance rates.

Rex Strip Shingles are being used on many moderately expensive residences. Yet they are so low in cost that the most modest home builder can afford them.

We have a beautifully illustrated Catalog that describes Rex Strip Shingles—and twenty-two other Rex products. It also contains much valuable information about all kinds of roofing materials. If you want a copy, just write your name and address on the margin on this page below, mail to us, and we will gladly send it.

Flintkote Manufacturing Co.

INCORPORATED

90 Pearl Street, Boston, Mass.

New York

Chicago

New Orleans

The "Finish" is Important

It does little good to carefully select and match wood for interior trim if the finish applied does not bring out the natural qualities of grain or pattern found in the wood itself and enhanced by the careful work of the builder. In some cases the primary object may be to preserve the wood. In any case this is, of course, an important consideration. There is seldom a case, however, where the matter of appearance is not considered on a part with the preservative qualities of the finish selected.

The finish of floors is important in that it requires a strong combination of the two qualities of good appearance and resistance to wear. The modern finish of floors is such that the natural grain of the wood is utilized. This grain must not be obliterated by the finish, but should be retained even when the stained rather than the natural finish is used. The resistance to wear includes taking into account the effects of moisture and other agents acting upon the wood.

Builders should be well acquainted with the facts concerning the finishing of woods. This knowledge is useful not only in a direct way, but it also fits the builder to give better service to his client thru the recommendations which he is able to make.

Because of 40 years of practical experience in making paint and varnish, Eugene E. Nice, 268-274 S. Second Street, Philadelphia, Pa., is able to offer builders excellent information on this subject. The products bearing the "Nice" trade mark includes a full line of varnishes, wood fillers, enamels, stains, etc. "Nice" wood filler is made in two grades: "Nice" and "Yellow Shield." Both grades will do the same work, are made from the same base and contain the same percentage of pure refined linseed oil. The difference in them is that in thinning the "Nice" grade, turpentine is used, while in the "Yellow Shield" grade, V. M. naphtha is used. For finishing floors, "Trokal" Liquid Floor Finish is made. This finish is made in "Superior" and "Extra" grades. While this material is primarily a floor finish it is also useful for bath rooms, toilet rooms, stairs, benches, seats, pews, etc. It is a transparent varnish which dries very hard but retains its elasticity and does not crack, chip or mark white.

Complete information will be furnished by Eugene E. Nice, Mfr., 268-274 S. Second Street, Philadelphia, Pa.



"Designo" Intermittent Fountain Ruling Pen

Every draughtsman, engineer, architect, designer or person otherwise engaged in work requiring the use of a ruling pen can easily realize the great saving which could be made if the time spent in filling the pen were to be spent productively.

The "Designo" Intermittent Fountain Ruling Pen, marketed by Kolesch & Co., 138 Fulton St., New York City, is designed

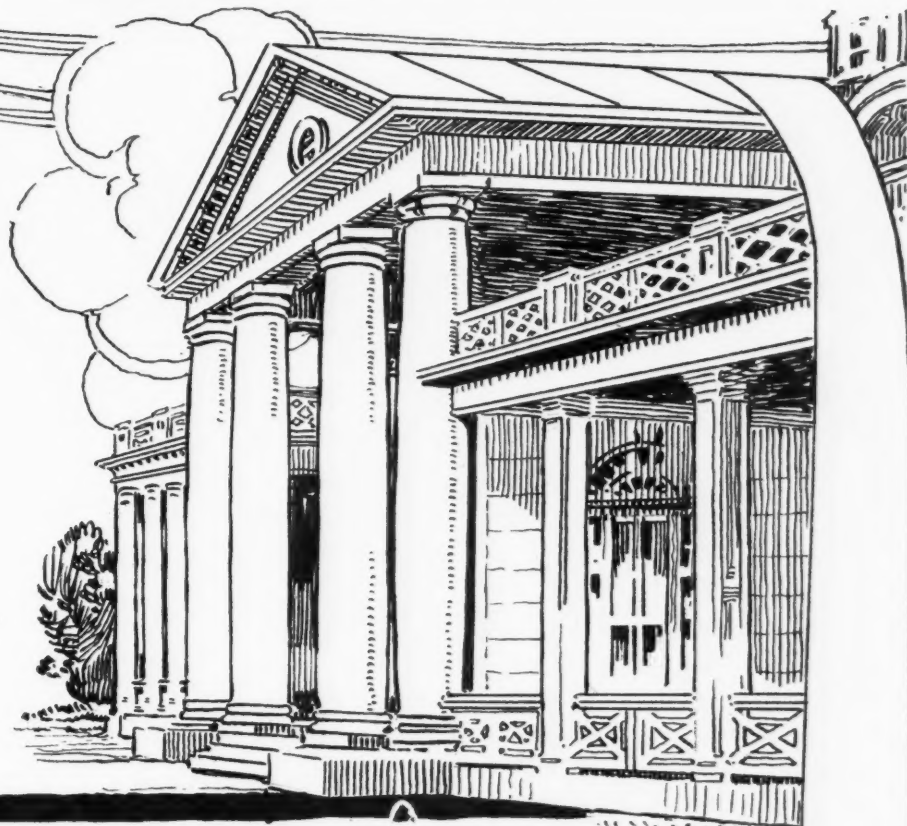


"Designo" Fountain Ruling Pen.

to save this time. It is intended for use with any ink, one filling being sufficient for a day's work. In use, the cap is pressed gently, causing the ink to fill the pen points. Ink acids do not affect it and its satisfactory operation is guaranteed.

Kolesch & Co. will furnish complete information to anyone interested.

The House Secure Is a Bayonne House



The far-sighted builder, who knows how to combine beauty with service, chooses his materials with care. He demands real value—longest and best results for the least cost. That is why he insists upon using

Bayonne Roof and Deck Cloth

wherever roofing and flooring materials are required

He knows that **Bayonne** will stand wear and weather longer than any other material. He knows that it cannot crack, curl or peel off, and is not affected by temperature changes.

He calls **Bayonne** the "all-weather" material, and he recommends it always for particular jobs on roofs, sleeping porches, conservatories, piazzas, etc.

Bayonne is more easily and cheaply laid than any other roofing or flooring material—metal or fabric—on the market. It lies smooth over the large spaces—fits perfectly into the tight places. Even in the the nooks of eaves and dormers **Bayonne** permits satisfactory laying. It lasts and never leaks.

Don't start a job this year until you have seen SAMPLE BOOK N. It gives prices and laying instructions.

JOHN BOYLE & COMPANY, Inc.

112-114 Duane St.

70-72 Reade St.

NEW YORK CITY

Branch House: 202-204 Market St., St. Louis, Mo.



Slate Roofing

UNIQUE EFFECTS PRODUCED BY PROPER APPLICATION OF PRODUCT

By E. J. Johnson

of E. J. Johnson, Inc.

IN these days when extreme architectural roof effects are being sought by the public, the staid old black slate roof of uniform color and regularity of vertical and horizontal lines does not always seem to fit into the "style." There is sought variety in appearance, both in color and form. To meet this requirement manufactured roofings in many colors and a variety of patterns are being constantly placed before the public by extensive and attractive advertising. The possibilities in slate to meet these varied needs are little known, even among the architects, who recognize as a fundamental principle that any building material in its natural form is greatly to be preferred to a manufactured article.

Slate for roofing is obtainable in a variety of natural colors, and these colors lend themselves to a variety of extremely effective haphazard combinations resulting in the richest color effects and architectural beauty. The basic colors in slate are black, blue black, gray, green, purple and red,

while in each color there are a variety of shades as well as combinations of two distinct colors in many individual slates, again while some slates retain their color, others weather to rich tones, giving effects that may be well likened to the autumn tints of the hillside.

Again the average person knows the roof slate only in its standard thickness (approximately 3/16 inch) and in its smoothness of surface and neatness of edges, whereas roofs are now being made up of slates in thicknesses up to 2 inches with rough dressed edges and having a surface showing a decided texture—such roofs generally being of the "graduated" character, which consists of slates starting at the eave very thick and graduating toward the ridge both in exposures and thicknesses, such slates also being laid "random" in width, thereby breaking up the uniform vertical lines as showing in a roof of uniform size. Such a roof may start at the eave with slate 2 in. thick and exposure of 15½ in.,



Detail of All-Slate Valley.

(Continued to page 134.)

Doors Equipped with Topping Hardware make Neat and Profitable Jobs!

THEY are just what your customers are looking for; and one garage equipped with this convenient hanger means many more sales.

Garages equipped with Topping Door Hangers and Hardware present an attractive front that is bound to please and satisfy your customer.

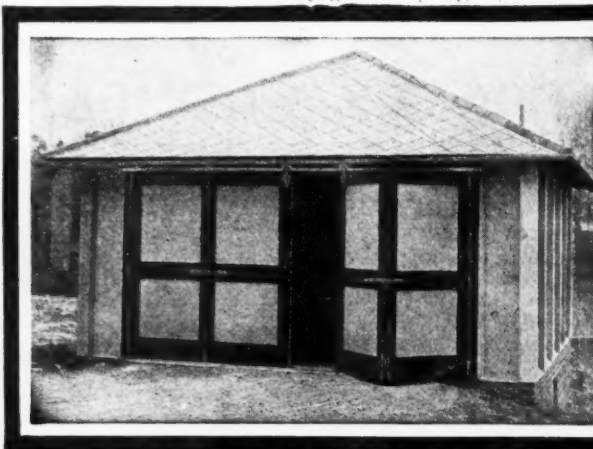
They eliminate the danger of damage to cars from wind-blown doors, are weathertight and can be easily opened or closed under all conditions. No unsightly runways necessary, as in ordinary sliding doors.

Send a postal now for further details and our terms. These sets of garage hardware are not expensive, are quickly and easily applied, and you can make a nice profit on each job.

Safety Door Hanger Co.

Department G

Ashland, Ohio



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



BUILDING SUGGESTIONS

Any books you check on this list will be sent you free. Write your name and address in the margin and state what kind of building you are planning.

- ☐ Roofing a Home
- ☐ Building a Poultry House
- ☐ Building a Bungalow
- ☐ Building a Barn
- ☐ Building Your Own Garage
- ☐ Covering Your Factory
- ☐ Artistic Roofs
- ☐ Waterproof Cellars and Stucco

Anxious Property Owner:

"Chief, is my roof in serious danger from flying embers?"

Confident Fire Chief:

"Not if it is covered with RU-BER-OID — *real* Ru-ber-oid. Many times it has proven itself to be thoroughly spark-proof."

Roof *your* buildings with RU-BER-OID. No building covered with RU-BER-OID is liable to catch fire from sparks.

RU-BER-OID meets with the approval of the Fire Underwriters' Laboratories.

RU-BER-OID can not rust, rot, warp, curl, crack, split or melt.

For more than 20 years it has protected roofs of all kinds. Many of them have never cost a penny for repairs.

Real RU-BER-OID has the Ru-ber-oid Man on every roll. He's a guarantee of long wear.

THE STANDARD PAINT COMPANY

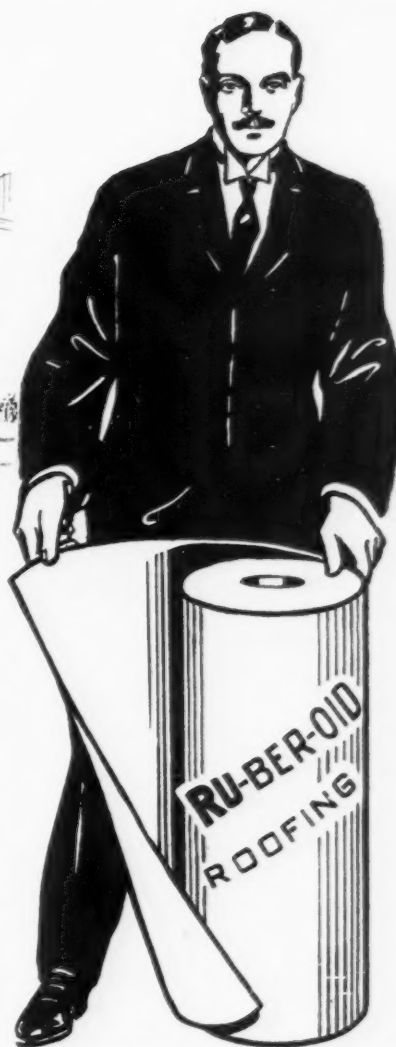
587 Woolworth Building, New York

BOSTON

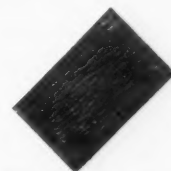
CHICAGO

Also makers of Ru-ber-oid Shingles and Impervite Waterproofing for Concrete

The Paraffine Paint Co., San Francisco (Under License)
The Standard Paint Co., of Canada, Limited, Montreal



TRADE MARK REG. U.S. PAT. OFF.



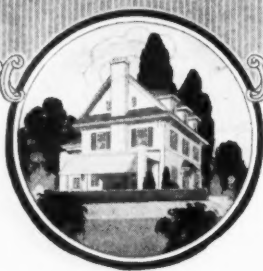
RU-BER-OID SHINGLES

are made in Slate Gray and Tile Red. They are laid just like wood shingles and give the architectural effect of slate or tile at a much lower cost.



Pronounced "RU" as in RUBY
RU-BER-OID
ROOFING
COSTS MORE - WEARS LONGER

MADE BY THE STANDARD PAINT COMPANY, NEW YORK, BOSTON, CHICAGO



Builders know

that even the moderate priced home needs more than one bathroom. The guest room, with its private bath, has become almost a necessity.

Then there should be an extra bathroom for the children. Because of its beauty and hygienic construction, builders are choosing

KOHLER WARE

always of one quality—the highest

Our manufacturing economies enable us to make KOHLER WARE available for homes of all classes, from the modest cottage up.

KOHLER WARE is first choice for the finest residences, apartments and hotels. All modern patterns.

*"It's in
the
Kohler
Enamel"*

The "Viceroy," our special one-piece built-in bath, is the most popular tub of its type ever constructed. Be sure to see it.

Every KOHLER product has our permanent trade-mark in the enamel. It is a guarantee of first quality.

Write for free copy of our interesting book, "KOHLER OF KOHLER." It contains much useful information for builders.

KOHLER CO., Founded 1873 **Kohler, Wis.**

Boston, New York, Philadelphia, Atlanta, Pittsburgh, Detroit, Chicago, Indianapolis, St. Paul, St. Louis, Houston, San Francisco, Los Angeles, Seattle, London

★ The star indicates the location of the KOHLER permanent trade-mark in faint blue.



"Viceroy" V-22 (Patent Applied For)

other courses following up the roof, 1½ inch, 1¼ inch, 1 inch, ¾ inch, ½ inch and ⅜ inches thick with exposures gradually reducing until the upper courses next to the ridge may show 6½ inches to the weather.

Further excellent effect is obtained by "staggering" the butts of slate, thereby showing rough and uneven course lines thruout the roof. Rounded valley showing the courses of slate continuing around the valley and on to the adjoining section is an added feature, as is also the finishing of hips and ridges with slate, avoiding the showing of any metal whatever.

While these "graduated" roofs have been made up largely in the greens, purples and reds, there are many circumstances where the building and its surroundings call for the sober, subdued blue black with a possible mixture of the dark grays.

Where cost does not permit of the graduated roof, a somewhat similar effect may be obtained without extra expense by using standard thickness slates of one length thruout the roof with various widths, thereby getting away from the uniform vertical lines of a standard roof, this being quite effective in the black slates as also the slates of other colors, either one tone or mixtures.



Farmhouse Planning Competition

A new plan has been devised by the authorities of the University of Wisconsin, who have been planning to erect on the University campus a model farm house, constructed as far as possible of Wisconsin products. Trained architects have submitted designs, but an appeal is now being made to practical farmers and their wives to assist the University in getting out the proper type of home, which particularly appeals to them. In order to encourage the farmers and their wives to compete, a \$50 prize has been offered by the Northern Hemlock and Hardwood Manufacturers Association, whose operations are chiefly in this state. According to Dean H. I. Russell of the College of Agriculture who wants to have the model farm house a true farm home, the architects competing produced beautiful designs, but the interiors were not such as to appeal to the needs of the farm. Now the plan is to ask for plans from farmers.

"We know," says Dean Russell, "that the plans they will submit will not be finished products from the standpoint of design, but if we can get the internal arrangement in a thoroly satisfactory and practical way, which will serve as a guide, their designs can be worked up architecturally by our state architect, who is thoroly in sympathy with the general scheme involved."

The plan of the university is to have every part of the house built and finished with Wisconsin materials, and all the equipment also from the Badger State, this house to stand on the campus, thus being both a demonstration of Wisconsin resources and a model for the students in agriculture.



A Word to the Wise

It will pay our readers to look into the proposition the Norwalk Vault Company is offering (see page 144). We have had very convincing proof that there are great possibilities for building up a congenial and very profitable business along the lines they suggest. It is not an untried experiment—thousands of men are today engaged in this work. It is a permanent business. It is a business that carpenters and builders are exactly qualified for. Their experience and training permit them to handle the mechanical end of the business very easily, and their business acquaintance and connections make it easy for them to handle the selling end.

In these days of high prices everyone needs more income, and everyone should be looking around for opportunities. Write to H. J. Cox, Secretary of the Norwalk Vault Company, Norwalk, Ohio, and ask him to send you full particulars of the proposition which they are willing to make readers of the AMERICAN BUILDER.



Screen Time is PEARL Time

RIGHT about now you're beginning to think about screenings—so—right now is the best time to investigate G & B PEARL Wire Cloth—best wearing screen material of its kind.

Rust is the great "screen enemy." G & B PEARL Wire Cloth is as near rust-proof as metal can be made. That is why it outlasts painted and galvanized screen. PEARL requires no paint—no repairs and is beyond question the best looking material that ever permanently protected a door or window or porch.

You'll find lots of screen materials that *look* like PEARL but don't *wear* like it. The rust resisting properties of G & B PEARL are due to a process exclusively used by us. So it will pay you to look for and insist on the genuine article which carries two Copper Wires in the selvage and a round tag on each roll as a mark of permanent identification. Durable—economical—handsome—clean—and easy on the eyes. Those are a few of the many reasons why G & B PEARL Wire Cloth is the leading screen material of the day.



There's a retailer near you who sells and recommends G & B PEARL for permanently screening doors, windows and porches. See him or write us direct for samples and literature.

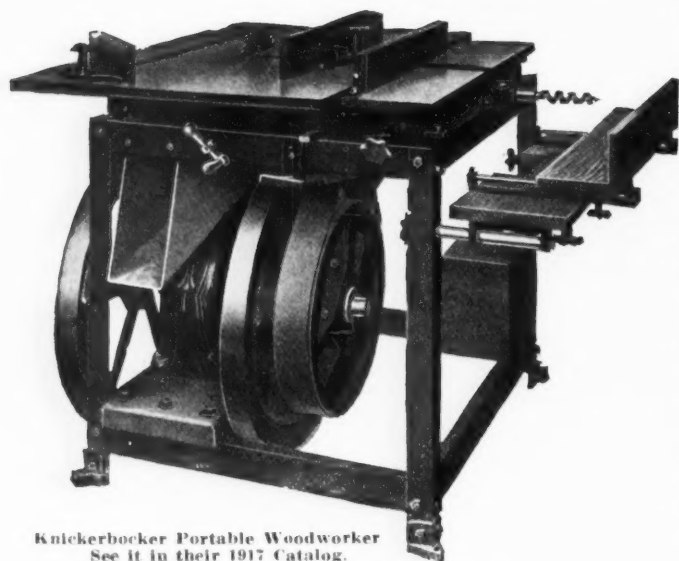
Address Department A

The Gilbert & Bennett Mfg. Co.

New York Georgetown, Conn. Chicago Kansas City, Mo.

PEARL is Made in Two Weights—Regular and Extra Heavy.

The best Hardware Dealer in your city sells "PEARL"



Knickerbocker Portable Woodworker
See it in their 1917 Catalog.

Knickerbocker Portable Woodworker

The machine shown in the accompanying illustration is the portable woodworker of The Knickerbocker Company, Jackson, Michigan. This outfit, with its various attachments, is capable of turning out a great variety of work, saving time and money for its owner.

The frame is constructed of two castings forming the base and top to which are bolted the four legs of 2x2x1/4 inch angles. At the bottom of the legs are brackets to be used for fastening the machine to the floor. The engine is mounted upon a heavy wooden support attached to the lower casting. The upper casting, which supports both the table top and the arbor, is cast with two additional cross pieces, making a rigid support for the bearings in which the arbor operates.

No rivets are used. This strong frame is an important feature since it is effective in cutting down vibration and thus lengthening the life of the machine as well as increasing the smoothness of its operation.

The arbor is 30 1/2 inches long, 1 3/8 inches in diameter, made of finely machined steel and fitted for necessary tools with which the machine is equipped. The arbor runs at 3,000 r.p.m. and is mounted on three bearings, one on each side of the jointer and a third at the saw end. These bearings are adjustable to take up wear. The three bearing arbor is one of the most important features of this woodworker.

The jointer or planer will make a cut up to 6 inches in width. The dado head or groover is 6 inches in diameter, of the Huther type, and will groove from 1/16 inch to 1 1/2 inch widths. An 8-inch emery wheel is furnished. Three sets of moulding knives come with each machine. The boring attachment is easily adjusted and can be quickly removed. Three auger bits are furnished, 1/2 inch, 3/4 inch and 1 inch. A 10-inch sander is used with the same table provided for the boring attachment. A band saw and other special equipment may be obtained.

The Knickerbocker Woodworker is 37 inches in height and weighs only 770 pounds complete with engine and all attachments.

Write The Knickerbocker Company, 525 Liberty Street, Jackson, Michigan, for complete information.

✦ The Efficiency Way

Nowadays people wanting buildings erected prefer to have the contractor figure on the work from the putting in of the foundation to the putting up of the curtains. This includes the laying of the basement floor, the concrete sidewalks, etc. Many contractors are giving away a big profit by sub-letting the laying of floors and sidewalks which they could save for themselves by investing in a set of long-handled concrete

(Continued to page 138.)

700

to 800 square feet to a gallon

"Nice" Liquid Filler

goes farther than any other filler, and is the *most profitable* for any builder to use. And what's more, it is a quality product through and through. In fact, for fine finishing, all

"Nice" Varnishes, Wood Finishes and Fillers

are quality finishes. They bring out distinctly, the natural beauty of the grain. They emphasize nature's beautiful markings whether the wood is inexpensive pine or costly oak. Every builder, contractor and architect should find out about "Nice" products. We manufacture varnishes, fillers, enamels, stains, etc., and back of every "Nice" product there is over 40 years of practical manufacturing experience.

But write us today about "Nice" Liquid Filler. We want you to get acquainted with this product. Ask for literature and prices.

LET US SEND YOU A LIBERAL SAMPLE

EUGENE E. NICE, Manufacturer

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FACTORIES IN PHILADELPHIA AND CAMDEN, N. J.

THE CONTRACTOR'S REASON

CLINTON WIRE LATH



"I WANT YOU TO NOTICE THE ABSOLUTE STATE OF preservation of that *Clinton Wire Lath*. My father built this building in 1864—the year I was born. Now I am tearing it down and am going to put up a modern building in its place."

"It is needless to say that *Clinton Wire Lath* will be used, not only to support the inside walls and ceilings, but also for the outside walls, as they are to be of stucco. I consider *Clinton Wire Lath* the best plaster support made and the *only* form of lath suitable for outside stucco work."

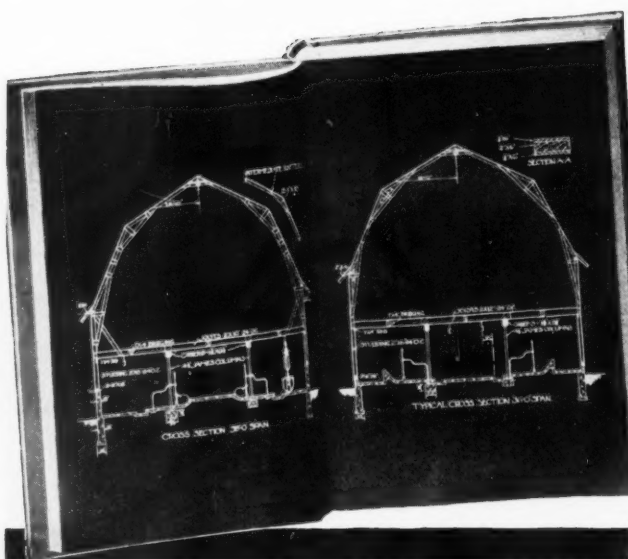
Send for our profusely illustrated book, "Successful Stucco Houses;" also "Clinton Handbook on Lath and Plaster." Both mailed free.

CLINTON WIRE CLOTH COMPANY

First Power Loom Weavers of Wire Cloth in the World

69 PARKER STREET :: CLINTON, MASSACHUSETTS
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Makers of "Pompeian" and "Golden Bronze" Screen Cloth, "Clinton" Painted Wire Screen Cloth, Clinton "Silver Finish" Screen Cloth, Clinton Poultry Netting, Clinton Electrically welded Fabric for reinforcing Concrete, Hunt Corner Bead, Tree Guards, Fence Gates, Clinton Perforated Steel Rubbish Burners, Perforated Metals, Perforated Grilles for all architectural purposes.



CARPENTERS

We'll send you these Barn Plans FREE

THIS "James Way" Book on dairy barns gives advice by barn experts on designing, locations, building and equipment. Carpenters and contractors will find this big 304 page book a wonderful help in any kind of barn construction.

The James reputation back of your work gives you a combination which will bring greater success and increased profits through more jobs. Careful dairymen specify James Barn Equipment. Thousands of the biggest and best dairy barns are equipped only the James Way.

JAMES BARN SERVICE

Includes nearly thirty plank frame construction blue-prints, chapters on barn ventilation, drainage, lighting, site, arrangement, etc. We will help you increase your reputation as a master barn builder.

We'll send you the book **FREE**, providing you send us the names of those in your vicinity who expect to build or remodel dairy barns—when they expect to do it,

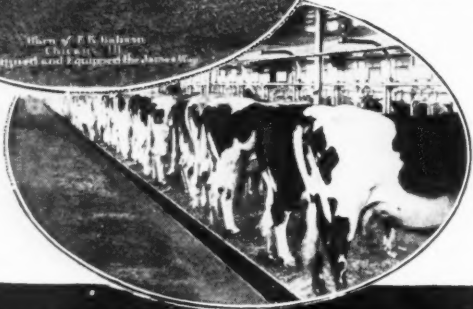
and about how many cows they intend to take care of. We'll help create business for you, too.

JAMES Equipment includes Stalls, Stanchions, Pens, Carriers, Ventilators, Watering Buckets, Trucks, Horse Stable Equipment, etc. **JAMES** Anchors make installation easy. All reasonably priced.

Write us NOW for the book.



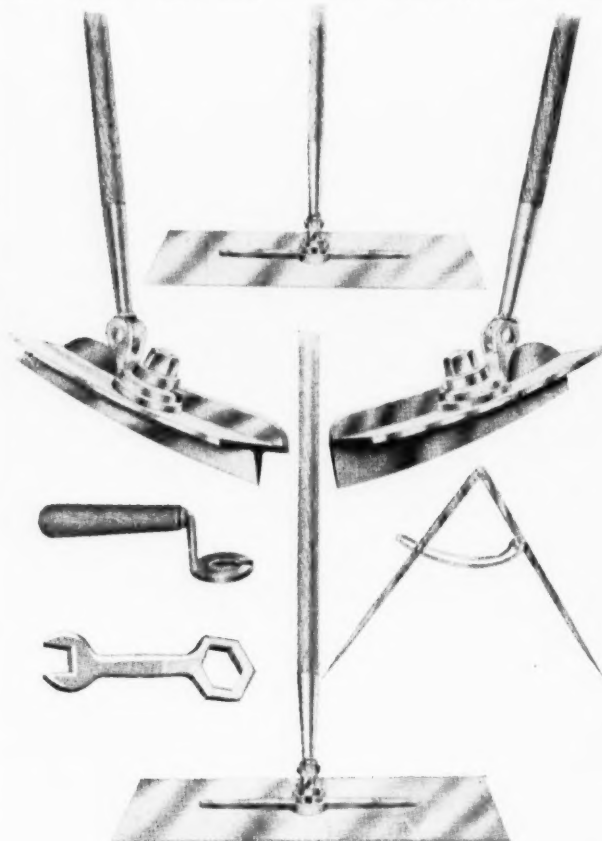
**We'll Help
You
Create
Business—
WRITE
US NOW**



JAMES Mfg. Co.

E. J. 75 Cane St.
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Wis.
Elmira, N. Y.

finishing tools. It does not take an expert to use the tools; in fact most any of his men can get thoroly accustomed to them within a day's time, and after that they can do better



A Few of the Arrowsmith Tools.

work and more of it than any expert finisher who uses the hand tools. The Arrowsmith Concrete Tool Co. stand ready to prove this, or rather to let you prove it by trying them out yourself on your own work and by letting you be the judge as to whether or not you want to keep them.

This concern makes all kinds of finishing tools, sidewalk forms, curb and gutter forms, road forms, name stamps and plastering trowels, floats, saws, etc., for the contractor and finisher. Investigate their line—it will pay you big profits.

Refer to their announcement on another page or write the company at Arrowsmith, Ill., for complete information.



"American Universal Way" of Surfacing Floors

The finish which is given a floor at the time of its being laid is usually expected to last thru a long period of years. While the walls and ceiling of the room may be redecorated and altered at will, it is seldom that anything is found to replace the wood surface of the floor. It is therefore important that the floor be finished in the best possible manner.

The old time hand-scraping process is altogether unsatisfactory since it stands for hard work, high cost and all too often a wavy surface. Since the electric motor is so adaptable for self-contained, portable power units, it is logical that a wood-floor surfacing machine should be constructed to be driven by an electric motor. A machine of this kind is being manufactured by the American Floor Surfacing Machine Company of Toledo, Ohio.

The machine consists of a solid frame mounted on rollers, to which is bolted a motor fitted with sprocket and pulley; the former is used to drive the cylindrical surfacing roller, mounted at the front, and the latter is used to drive the

(Continued to page 140.)



“Yes, That IS a Beautiful Barn —and I am Proud of THAT Job”

THE KING AERATORS on the roof add beauty to any barn. They are the first things you see whether you look at the barn in a photograph or stand before the building itself. They give the barn a finished appearance that makes you proud to say that you built it. Recommend King Aerators in your barn jobs. Please your customers more and save yourself the cost of making cupolas. King Aerators are also the first units in the

KING SYSTEM 'of Ventilation

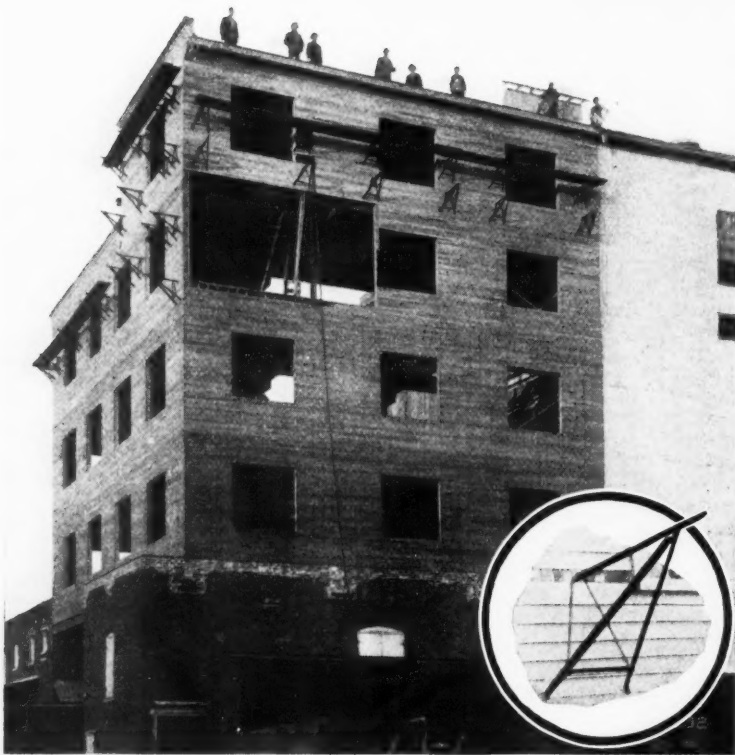
and barn ventilation is the farmer's big problem. We answer this problem for him by drawing plans of ventilation to fit the actual conditions in his building. That's King service. Sooner or later your customers will want a King System. Speak to them about it. Tell them to let you install it while you are building the barn. Make extra profits for yourself and give them better barns. If they are not ready for a King System, save them money when they do get it by having King Aerators on the roof. Write for our book on barn ventilation showing many photographs of barns fitted with King Aerators.



King Aerators

are ready to go in place the minute they arrive. Use them and save yourself the cost of building wooden cupolas.

King Ventilating Company,
1120 Cedar Street Owatonna, Minn.



"Trouble Saver" Steel Scaffold Brackets Were a Great Help on This Big Elevator Job.

vacuum dust collector under the motor. The sanding roll is 12 inches long and runs 725 revolutions per minute. It is mounted on pivoted arms which are arranged in such a man-

ner that the idler sprocket is eliminated. The pivoted arm arrangement is claimed to possess many advantages such as long life of parts and freedom from vibration. The roll is made of sheet steel over which is placed a layer of heavy felt, no rubber being used. Quick acting clamps are used to hold the sandpaper to the roll, the sheets being cut and folded to exact size in a sheet steel pattern and gauge which is furnished with each machine. An edge sanding roll 4½ inches wide is furnished to finish right up to the wall. This roll is used without disturbing the adjustment of the main sanding roll in any way. The vacuum dust collector makes it possible to finish floors in any building without disturbing the occupants. The machine may also be used as a polisher by replacing the sandpaper with a piece of brussels carpet.

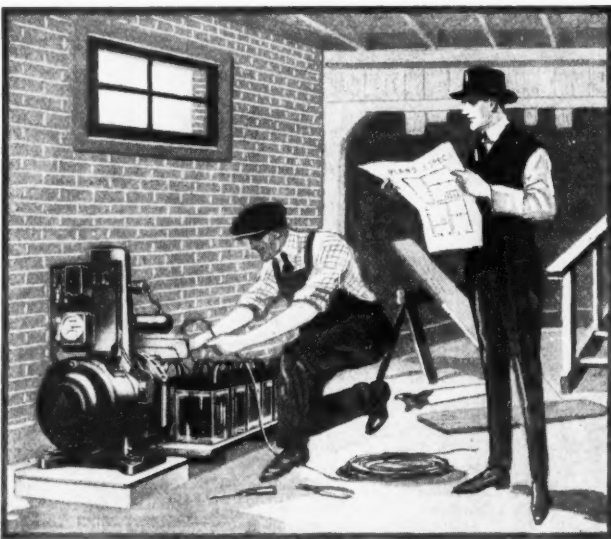
There are several other special features which have not been mentioned. A complete description and other information, including operating costs, guarantee, special advantages and liberal trial offer will be furnished to anyone interested by the American Floor Surfacing Machine Company, 515 S. St. Clair St., Toledo, Ohio.



On Big Work, Too

Here is one of the best pictures we have ever seen of scaffold brackets on large work—and serves largely to inspire confidence in their safety and strength. The brackets used on this job were "Trouble Savers," manufactured by The Steel Scaffold-

ing Co., Evansville, Ind. It will be noticed that one of
(Continued to page 142.)



Prices in U. S., Except Western Points

\$275 and \$325

F. O. B. Dayton

Prices in Canada \$390 and \$465 F. O. B.

Distributing Point

DELCO-LIGHT

*Electric Light and Power
for Farm, Village and
Suburban Homes*

WE WANT to send to every builder in the country an illustrated folder describing Delco-Light.

Delco-Light betters living conditions on the farm. It furnishes an abundance of clean, economical, safe light for house and out-buildings. It makes possible a modern bath and running water in various parts of the house, and it furnishes power for small farm machines.

Delco-Light is a complete electric power plant—wonderfully compact, economical and efficient—and so simple that a child can care for it.

Be sure to write for the illustrated booklet

**The Domestic Engineering Company
Dayton, Ohio**

Offices in all principal cities



You can place G-E Motors anywhere

THIS illustration shows two G-E motor drives used in woodworking shops. The glue jointer is operated by a G-E motor on the ceiling, and the edging machine is driven by a G-E motor on the floor.

In considering new equipment, have the motor and motor control made a "built-in" part of the machine. You will find that progressive wood-working machinery manufacturers are prepared to furnish G-E motors as a part of direct-driven combinations.

Ask your manufacturer, your power company, or our nearest office about G-E motors and "Safety First" motor control.

General Electric Company

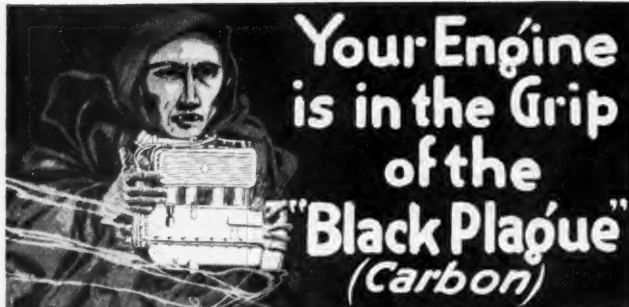
General Office,
Schenectady, N. Y.



Sales Offices in
All Large Cities

2500 G-E Motor Agencies

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THAT'S the principal reason your car starts so hard this cold weather. Fully 80% of your starting trouble can be eliminated if you will clean out your cylinders with

JOHNSON'S CARBON REMOVER

This is the latest and most perfect solution of the carbon problem. It is easy to use—inexpensive and absolutely harmless. It will save you ten times its cost every time you use it.

DO IT YOURSELF

Five minutes' time and no labor required. Simply lift your hood and pour an ounce of Johnson's Carbon Remover into each cylinder through the petcocks or spark plug openings. Go to bed—get up in the morning and drive a perfectly clean engine. You can save from \$3.00 to \$5.00 over any other method without loss of time and with very much better results.

USE IT EVERY 1000 MILES

If you will use Johnson's Carbon Remover every 1000 miles you can keep your engine clean and sweet and always at its highest efficiency and your gasoline consumption will drop from 12% to 25%.

OUR GUARANTEE

Johnson's Carbon Remover cannot injure any part of your motor. It contains no acids—does not in any way affect lubrication or injure the oil in the crank case. It has no action on any metal.

If your dealer cannot supply you, we will fill your order direct from Racine. Use attached coupon. With each of these \$1.00 cash orders, we will include gratis a half-pint can of Johnson's Stop-Squeak Oil—our new product. It penetrates between the leaves of springs, thoroughly lubricating them and giving perfect spring action.

S. C. JOHNSON & SON, Dept. AB3, Racine, Wis.
LONDON SYDNEY

S. C. JOHNSON & SON, Dept. ACB1, Racine, Wis.

I enclose \$1.00 for which please send me by prepaid express enough Johnson's Guaranteed Carbon Remover to thoroughly clean an ordinary four-cylinder motor three times and include a half-pint can Johnson's Stop-Squeak Oil gratis.

Name

Address

City and State

My Dealer Is

the brackets here was used as a derrick to lift timbers and lumber up to the workmen.

The foreman on this job assured the steel scaffolding people that they made a saving of over \$400.00 on this building in the matter of scaffolding—while the total value of the scaffolding used was only \$105.00.

They were used to put up the frame work and sheathing as the building went upward—and they put on the corrugated steel from the top downward, resetting the brackets at the same points as they came down they had used in going up.



Little Giant Cement Brick Machine

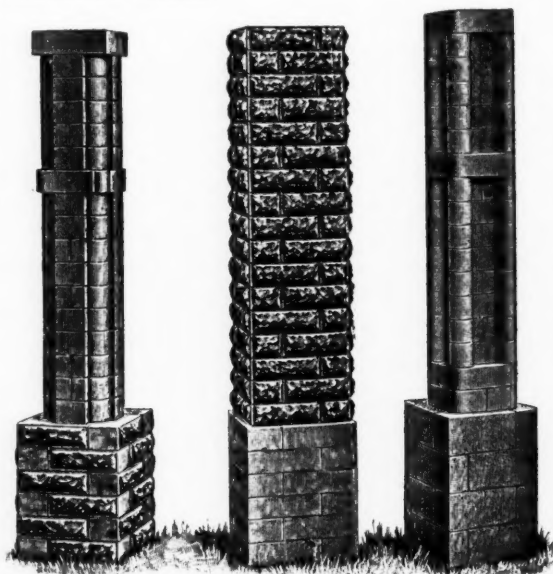
The investment required to start manufacturing cement brick with the Little Giant Cement Brick Machine, manufactured by the LaGrange Specialty Company, LaGrange, Indiana, is very small. The machine may be operated by one man and is very simple and compact. Either plain or ornamental brick may be made.

It is not necessary to use a pallet with the Little Giant. The bricks may be removed from the machine upon any level surface. By the use of a removable core, a depression may be made in each brick, thus saving one-fifth of the material. In placing the brick in the wall the mortar is squeezed up into the hollow, forming a tenon joint. In case a solid brick is desired, the cores are removed.

The accompanying illustration shows a few of the possible designs of cement brick columns and piers made with the Little Giant Cement Brick Machine. It requires little more time to make the ornamental brick than is taken for the plain brick.

The machine is made of cold rolled hard polished steel and makes three bricks at a time. The only tool needed is a good heavy shovel. With it the brick are tamped and struck off. The brick are then removed upon any level surface. In case a pallet is used, the brick are removed lengthwise of the pallet, which eliminates breakage of brick due to warping of the board.

Anyone interested in the manufacture of cement brick may obtain more complete information regarding the Little Giant Cement Brick Machine from the LaGrange Specialty Company, LaGrange, Indiana.



Cement Brick Porch Columns Laid Up of Brick Made on the "Little Giant."

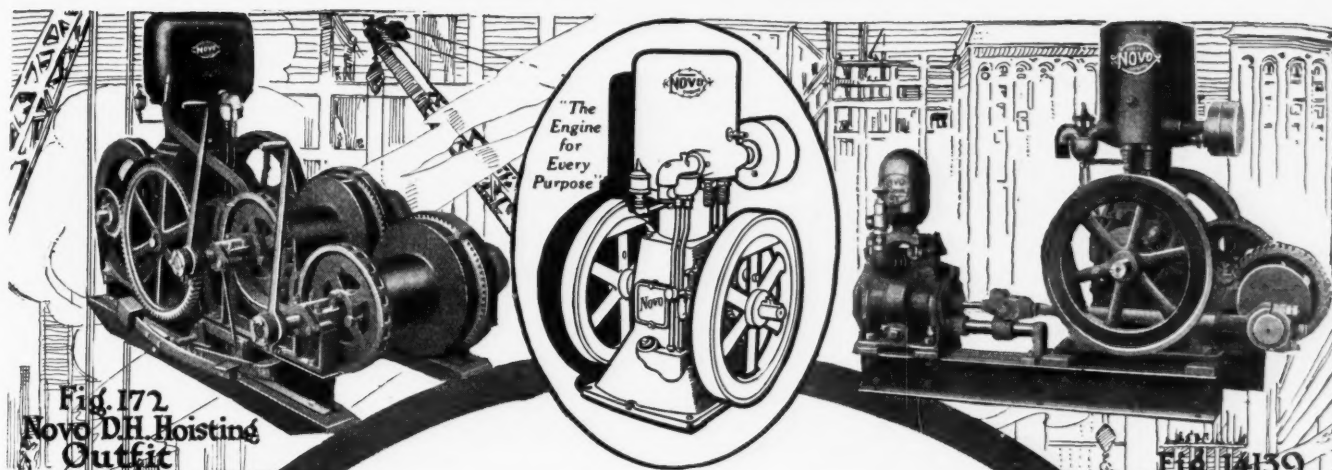


Fig. 172
Novo D.H. Hoisting
Outfit

Fig. 14139
Novo Type U
Pumping Outfit

Tested by the Nation

The Novo D H Hoist and Type "U" Pump are being used in all kinds of contracting and engineering work. If these outfits have any weak spots, they haven't developed yet. Wherever there are materials to hoist, or water to pump, there is an opportunity to save by using these outfits. They are driven by Novo Engines, which to those who know Novo, means Reliable Power. The Novo is the handiest, steadiest, most economical source of power. For these reasons Novo is running eight out of every ten concrete mixers.

NOVO

REG. U.S. PAT. OFF.

ENGINES and OUTFITS

NO TANK
NO FAN
NO FREEZING
TROUBLE

Novo also runs a long list of Novo Outfits, Hoists, Pumps, Air Compressors and Saw Rigs, all portable. They are described in our free book.

There are Novo Hoists suitable for any work up to 15 H. P. They are furnished in many combinations, reversible, non-reversible, single drum, double drum, one and two speed, sheaves or nigger heads, or one of each. All cut gears have wide faces and large teeth. Bearings on gear drums and sheaves are bronze-bushed. Friction surface is greatest possible—double cone or V-type wood. Gear guards throughout.

Novo Type "U" Pumping Outfits are displacing other pumps in oil field service where they often must work against even three-mile heads of water. This outfit will do all that steam can do, with less cost, less weight, less running expense, less trouble. These things we can prove to you.

Wouldn't you like to know all about other Novo Outfits? Wouldn't you like details on the advantages of standardized power? Then let us send you our free book—"Reliable Power." It describes Novo Engines and Outfits. Use your letterhead, please.

NOVO ENGINE CO.

Clarence E. Bement, Sec. & Gen. Mgr.

701 Willow Street, Lansing, Mich.

Chicago Office: Lytton Building

Novo Engines furnished to operate on gasoline, kerosene, alcohol or distillate

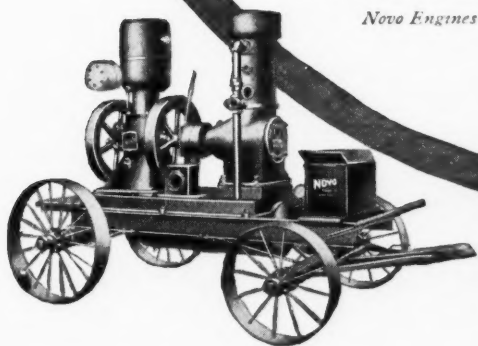


Figure 276—Novo Portable
Air Compressor Outfit

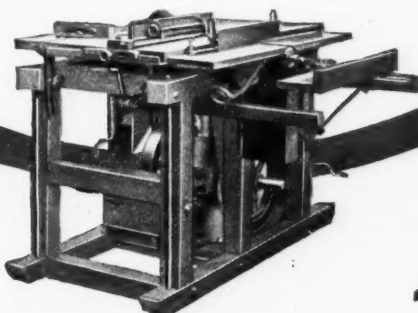


Figure 134—Novo Portable
Saw Rig No. 4



Figure 173—Novo Diaphragm
Pumping Outfit

Gibler Concrete Block Facing

A process of facing concrete blocks which is at the same time simple, effective and economical, is found in the use of crystal covered sheets, the process of B. F. Gibler, Mauston, Wis. A sheet of paper the size of the block which is to be made is placed in this granite facing machine and coated with a special glue. It is then easily and very quickly covered with granite crystals, and the surplus dumped back into the machine. The sheet is then placed in the block machine, paper side down, and is covered $\frac{1}{4}$ inch deep with rich cement mortar which is tamped into the voids in the facing film. When the block is released, the paper sticks to the block and the block is carried away to season.

The paper holds the crystals in place while the block is



The Gibler Granite Facing Machine and Part of Granite Faced Block.

being tamped. It makes possible the use of a wetter mix with no chance whatever of sticking to the face plate, thus producing a stronger and less porous block. It also protects the face of the block and keeps it clean while tamping. The paper is removed by wetting after the block is set, and no acid solution or any other treatment is needed to complete the work.

In many localities there is an active demand by those who recognize the advantages of the concrete from a structural standpoint, for an artistic facing which may be applied to the

concrete without involving a prohibitive expense. Concrete blocks faced with micaspar crystals closely resemble blocks of granite. They present a pleasing appearance when built into the wall and bring a much higher price than the ordinary concrete blocks.

The facing sheets supplied by the Gibler plant at Mauston are made from micaspar crystals from New York quarries in various sizes and packed in bales of 200 sheets. There will be an advantage found by some in preparing the sheets where the blocks are to be manufactured, in which case the graniting machine is supplied.

Readers of AMERICAN BUILDER who wish to investigate this method of facing concrete blocks may obtain full information from B. F. Gibler, Mauston, Wis. He is making a special price reduction at this time for a limited period only on his machine and the right to use this method. He is also permitting a 10-day free trial.



Hercules Block Machines

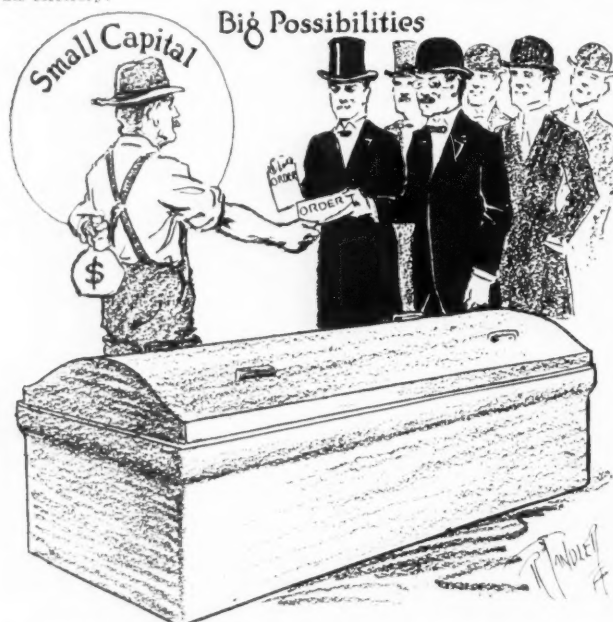
One of the most important features of the Hercules Block Machine, from the standpoint of the average concrete products man, is the fact that the initial investment, while it may give a machine capable of producing large and elaborate units, does not necessarily include the expense of the equipment necessary to make such units. The machine itself is the base or foundation, and the outfit, which consists of the plates for forming the stone, may be made large or small, as desired.

There are three sizes, designated as the "Hercules Regular," the "Hercules Special" and the "Hercules Junior." These machines may be equipped to make a large variety of sizes and shapes, and the Century Cement Machine Company, the manufacturer, will supply anything special which it is desired

(Continued to page 146.)

"200% Profit in my Second Year"

UP in a little town alongside the Hudson is a live man. Some day he will be a rich man. For, in a little over two years, he has not only created a business of his own, but doubled his equipment and tripled his territory.



THREE years ago this summer, he first heard of the Norwalk Vault. Scraping together \$450 he took over the franchise for his County. He kept his regular business position, working at his vault business at nights and odd times.

WITHIN a year his profits had paid back his original investment, and left him a hundred dollars or so to the good besides. In his second year he cleared more than 200 per cent profit.

ALL this was done, mind you, outside his regular working hours, and in a dark, low cellar. He had no one to help him, and no capital. Now, however, things began to change; he moved into a shop with plenty of light and air, resigned his position to devote all his time to developing his own business. In another year, he was independent with money in the bank.

OF course, the man we would rather hear from is the one a little surer of success—the man with enough capital to go into vault manufacturing for his locality in a way big enough to make it a pleasure rather than a struggle. With the Norwalk Vault it is just as easy—and a good deal more certain—to make 200 per cent on an investment of \$4,500 as on one of \$450.

THE amount of money required varies directly with the size of the territory occupied. Even in the large cities, though, the capital necessary is astonishingly small compared with the possible returns. You won't need an expensive factory—any respectable shed will do; nor high priced labor—any intelligent laborers can do the manufacturing; nor any large sum tied up in machinery or materials—a few dollars at a time will keep the work going.

EVERY day, therefore, the franchise to manufacture the Norwalk Vault in any territory becomes increasingly valuable. Nearly half of the United States has in the last six years already been taken over by local manufacturers. If your territory has not, we will invite you to compare the opportunities of the Norwalk Vault with any other business you can find.

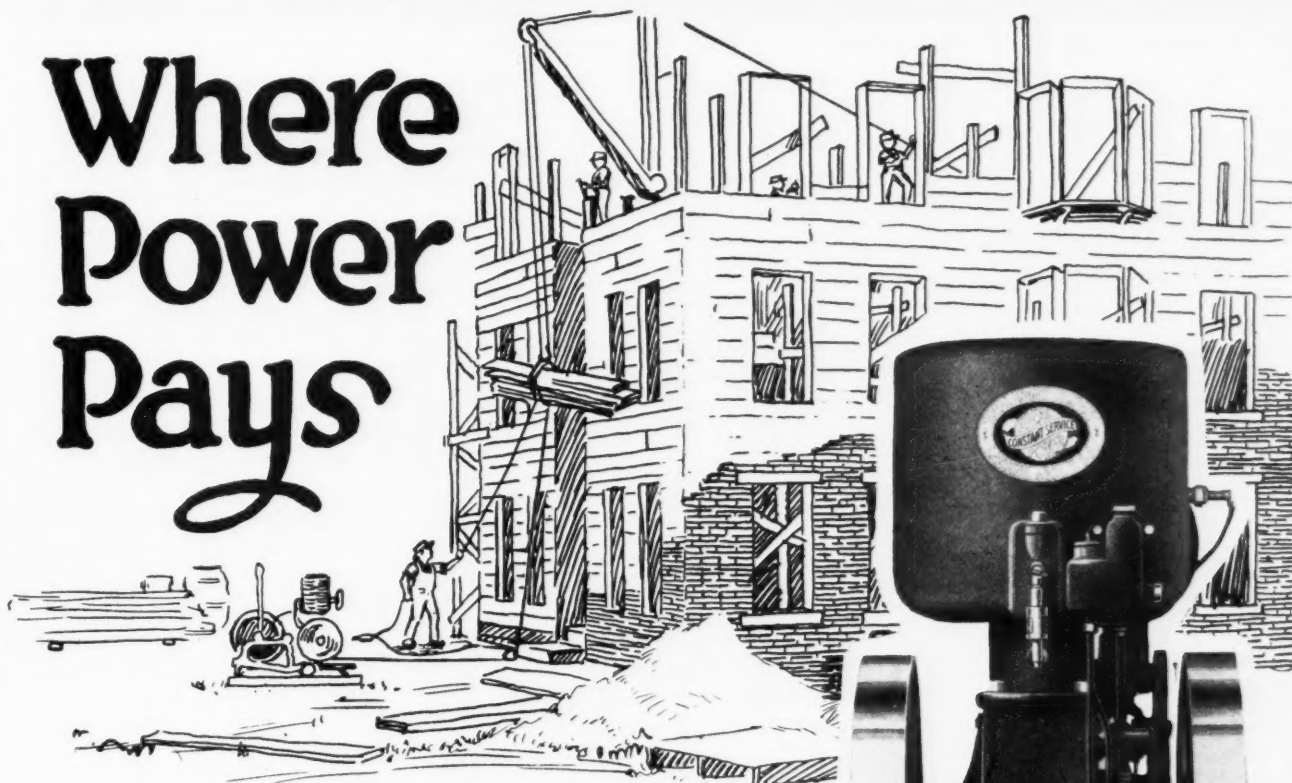
Look through the advertisements in this or any other magazine; see if you can discover any other article, patented and trademarked, with a sale based on as unchanging a thing as the human death rate, that you can develop exclusively in a protected territory, and cash in on as fast as the article becomes known to the public.

IF the idea appeals to you—and you have the energy and capital adequately to take care of your territory—write us for the details. We'll be glad to answer fully and frankly every question in your list, no matter how long. No obligation whatever on your part. Address

**The Norwalk Vault Company, 71 Seminary Avenue
Norwalk, Ohio**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Where Power Pays



ON CONSTRUCTION work of all kinds there is need for *reliable* power to speed up the work. Because keen competition, labor scarcity and constantly increasing cost of materials make it essential that carpenters and builders employ every possible method for reducing cost.

Ideal Engines and Ideal pumping and hoisting outfits are designed and constructed especially for this class of work. They furnish economical, dependable, year around power.

And on thousands of building jobs Ideal Engines are *more* than paying their way—they are adding profits to every job by making possible faster building with less cost for labor.

Wherever there is material to hoist—water to pump or other work requiring power, the Ideal will deliver dividend paying service.

Light weight for its power—therefore easy to move

about. Vertical type, requiring small floor space. The enclosed crank case keeps the cylinder, piston and rings free from dust, dirt and grit.

Frost-proof, dirt-proof and fool-proof. Runs with minimum care and attention. Needs no engineer. Well balanced so that when mounted it runs with practically no vibration. Equipped with a special carburetor, so arranged as to use warm air, which insures greater efficiency even in the coldest weather.

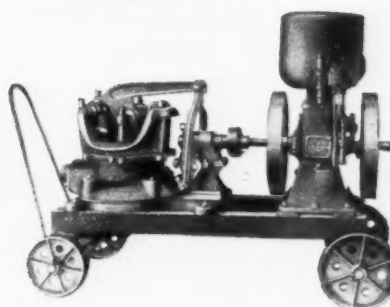
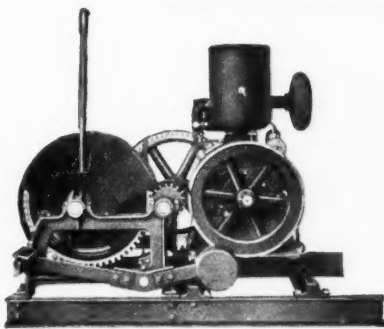
For complete details of the Ideal engine, together with all information and special equipment for carpenters and builders, address

IDEAL ENGINE COMPANY

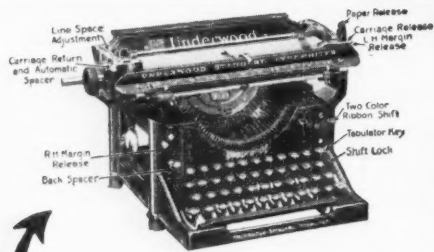
R. E. OLDS, Chairman

630 E. Kalamazoo St.

Lansing, Mich.



TYPEWRITER SENSATION



**Free Trial
Use as
You Pay**

Only \$3.00 a month until the low total price of \$49.15 is paid, and the machine is yours.

This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay \$3.00 a month and own one. Think of it—Buying a \$100.00 machine for \$49.15! Cash price, \$46.45. Never before has anything like this been attempted.

STANDARD VISIBLE UNDERWOOD

Perfect machines, Standard size. Keyboard of Standard Universal arrangement writing 84 characters—universally used in teaching the touch system. The entire line of writing completely visible at all times, has the tabulator, the two color ribbon, with automatic reverse, the back spacer, roller bearing carriage action, in fact every late style feature and modern operating convenience. Comes to you with everything complete; tools, cover, operating book and instructions, ribbon, practice paper—nothing extra to buy. You cannot imagine the perfection of this beautiful reconstructed typewriter until you have seen it. I have sold several thousand of perfect latest style machines at my bargain price, and every one of these thousands of satisfied customers had the beautiful, strictly-up-to-date machine on five days' free trial before deciding to buy it. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter you ever saw, you can return it at my expense. You won't want to return it after you try it—you cannot equal this wonderful value anywhere.

You Take No Risk—Put In Your Order Now

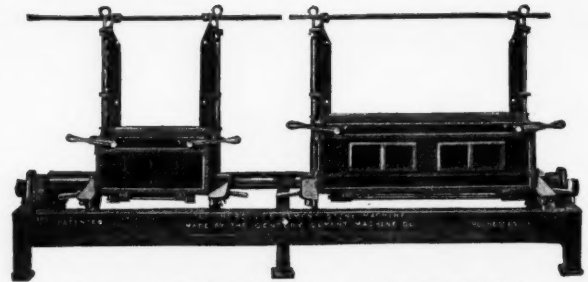
When the typewriter arrives, deposit with the express agent \$7.15, and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me \$3.00 a month until our bargain price of \$49.15 is paid. If you don't want it, return it to the express agent, receive your \$7.15 and return the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it. It is standard. Over one hundred thousand people own and use these typewriters and think them the best ever manufactured. **The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly.** There is no red tape. I employ no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full \$49.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have. **Do not send me one cent. Get the coupon in the mails today—sure.**

HARRY A. SMITH, 300, 231 N. Fifth Ave., Chicago

H. A. SMITH, 300, 231 N. Fifth Ave., Chicago, Ill.

Ship me the Underwood F. O. B. Chicago, as described in this advertisement. I will pay you the \$42.00 balance of the SPECIAL \$49.15 purchase price at the rate of \$3.00 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

NAME.....
ADDRESS.....



The "Hercules Regular" Concrete Block Machine.

to use with their machines. The "Regular" machine will make stone from 3 inches to 6 feet long, 4 inches to 16 inches high and from 4 inches to 20 inches wide. On the "Special" machine stone may be made from 3 inches to 32 inches long, 4 inches to 16 inches high and from 4 inches to 20 inches wide. The "Junior" machine was designed particularly for the production of 16-inch blocks.

By the addition of extra pairs of L arms, the "Regular" machine may be made to take the place of several machines. In this way one machine may be used to produce at the same time two blocks 20, 24 or 32 inches long, or four 16-inch blocks. The investment may be increased as the business grows and equipment for special work added as it is needed. The one machine makes water tables, sills, lintels, coping and other units in addition to standard building blocks having an almost unlimited variety of facing patterns. All units are made of wet concrete composed of aggregates graded in size up to coarse gravel. Concrete made in this way develops maximum strength. In the production of the standard building blocks, the cores are inserted horizontally, but they are drawn vertically so that no damage is possible by settling.



"Hercules Special" Block Machine.

The Century Cement Machine Company, Rochester, N. Y., will explain fully the possibilities of their machines to anyone interested.

✦ Canvas Roofing

Canvas roofing has long been recognized by representative builders as the roofing material that withstands constant wear and tear. It is also used to cover porch floors, and when the up-to-date builder has a porch floor to cover that is subject to hard usage he turns to canvas. The result is that canvas roofing covers the roofs and porches of many of the leading residences throughout the country.

It is rapidly demonstrating its superiority because it does not expand or contract, because it is noiseless, and because it is not affected by tread of feet or drip of rain.

Some builders have objected to canvas roofing because they thought or imagined that it was difficult to lay. This objection may have come from their experience in handling canvas which had not been treated for roofing purposes, but John Boyle & Co., Inc., who have been headquarters for canvas for over half a century, have overcome this prejudice by producing a material which is known as "Bayonne Roof and Deck Cloth." This is a canvas roofing made waterproof by a special process that also prevents its being affected by heat or cold. "Bayonne" is soft and pliable and is easier to lay than a carpet. It fits smoothly and snugly into the various nooks and corners which so often trouble the builder or workman who uses ordinary untreated duck.

Another strong point is that "Bayonne" is not laid in wet paint, and only one coat is needed after laying. This is a very important factor with paint at \$2.50 per gallon, making the cost to the builder at least \$2.00 per square foot for each coat of paint.

(Continued to page 148.)

Every Country Home You Build Needs Electricity

HERE is a chance for carpenters and builders to cash in on the big, growing demand for electricity in rural districts. The up-to-date prosperous farmer is thoroughly sold on the idea of having city conveniences.

The Uni-Lectric Lighting Outfit is fulfilling one of the greatest needs in the farm home today. It is furnishing the farmer, his wife and their family with thoroughly efficient electric current—current which can be used for lights as well as for operating electric irons, vacuum cleaners, electric fans and small motors for power purposes.

The Uni-Lectric system is in reality a central service station in home size. It is a compact, complete unit and the first thing of its kind ever devised.

No Belts—No Batteries—No Complications

The Uni-Lectric outfit generates standard 110 volt direct current, exactly the same as city central service stations. The outfit comprises a small high-speed, perfectly governed, four-cycle engine and a very efficient generator, direct connected.

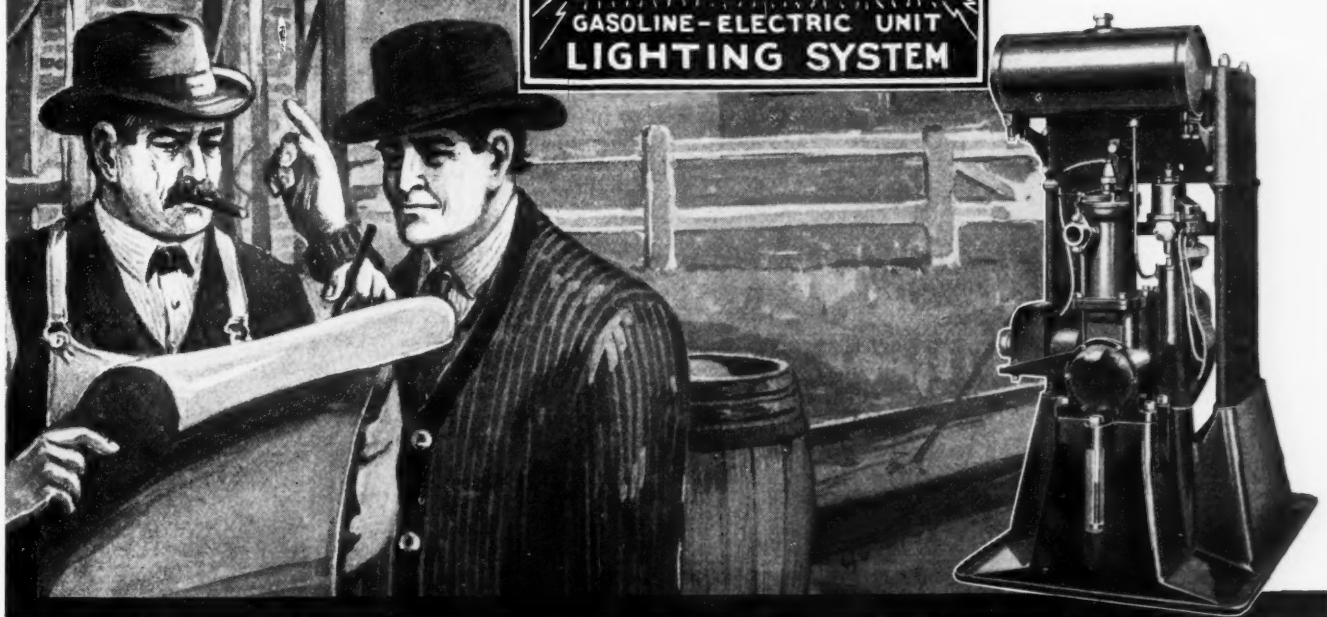
The whole outfit is simple and very easy to understand and operate, requiring the very minimum of care and attention. The wiring is very easily done and, if our directions are carefully followed, it is not even necessary to get the assistance of an electrician.

The Uni-Lectric has unusual capacity for a home-size plant. It will operate all the way from one to fifty lights, and as previously stated can be used for other power and heating devices.

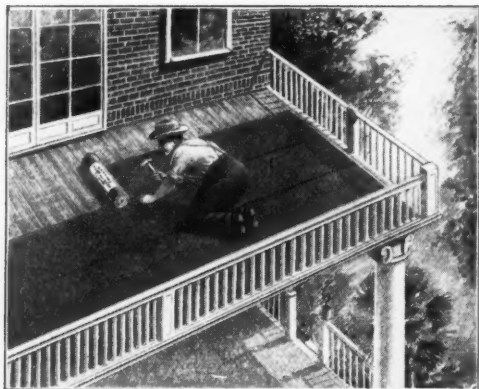
There is a splendid opportunity for contractors and builders to introduce Uni-Lectric machines where they are building new country or farm homes. You will not only be pushing a device that is a boon to the farmer, but a device that has thoroughly demonstrated its efficiency and practicability in the hands of users.

For complete details of our special proposition to contractors and builders, write us at once, addressing

THE WATERMAN MOTOR COMPANY
152 Mt. Elliott Ave. Detroit, Michigan



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Showing How Bayonne Roof and Deck Cloth is Applied.

Another feature of "Bayonne Roof and Deck Cloth" is the appearance of the roof after the material is laid. "Bayonne Roof and Deck Cloth" is a canvas treated by machinery and the waterproofing ingredients are applied evenly and smoothly. After it is laid and painted the roof has a very neat appearance. Compare this with a roof of ordinary cotton duck which is first imbedded in wet paint and then filled with from three to four coats. It is practically impossible to obtain an even finish, and in addition the paint is very apt to chip off, and when the paint chips the roof leaks. This is entirely overcome by the "Bayonne" process, as it cannot chip and is always waterproof.

Some interesting comments regarding the laying of both untreated canvas and treated canvas are shown in the letters contained in a booklet published by John Boyle & Co., Inc., 112 Duane St., New York City, entitled "Opinions of Practical Builders."

Trussed Concrete Steel Convention

A large and enthusiastic convention was recently held at the plant of the Trussed Concrete Steel Company at Youngstown, Ohio, branch managers and representatives from every section of the country were in attendance, nearly two hundred men taking part in the meetings.

The convention was opened Tuesday morning by S. M. Fechheimer, general chairman and publicity manager. The principal address of the morning was by Julius Kahn, president, who in a masterly way reviewed the excellent work of the company for the past year and outlined a program for 1917 business. Mr. T. H. Kane, works manager, followed with an address on the progress made in the shops. The Tuesday afternoon session was devoted to the subject of credits and contracts, and brought out two very valuable papers; one by O. W. Chaffee, manager of the credit department, and the other by O. W. Irwin. These papers were followed by an interesting discussion.

The Wednesday morning session was devoted to the subject of Kahn Pressed Steel and Kahn Steel Buildings, with papers by C. I. Auten, department manager, and H. W. Faraday, followed, in the afternoon, by an address and discussion on Reinforced Concrete by R. D. Snodgrass, chief engineer.

On Thursday morning, P. M. Louwerse, manager of the sash department, gave a valuable paper on the subject of Steel Sash, followed by another paper by F. W. Cummer, and discussion. At the afternoon session, Louis Baum, manager of the Kansas City office, presented a paper on Floretype Construction.

The greater part of the Friday sessions were devoted to the subject of Hy-Rib, Metal Lath and Highway Products. Mr. John Bowditch, manager of this department, presented the principal paper, followed by W. A. McIntyre, assistant

(Continued to page 150.)

THE FIRST REPAIR BILL

WHEN a man builds or buys a new house, the first thing of any consequence needed in the way of repairs is repainting. Often this comes at a time when the owner, if he bought the property on a monthly payment contract, can ill afford it, and his disposition is to postpone painting as long as possible regardless of the needs of the lumber.

The holders of the mortgage and contract require adequate insurance against fire as long as they have any interest. Decay insurance is no less important to them. It can be furnished at very small expense if provided for when the contract is let. It is merely a matter of a thin priming coat of

CARTER ^{Strictly Pure} WHITE LEAD

when the lumber has dried out] followed by two body coats of the same pure paint; the last coat mixed with linseed oil alone, to make a surface with a high gloss.

When you say to a buyer,—"This house is painted with three coats of Carter White Lead and Linseed oil," he knows there will not be a big painting bill in a year or so to upset his calculations and make it hard for him to keep up his payments.

Good painting not only makes property more saleable—it is decay and depreciation insurance for both house owner and mortgagee at very small expense. It costs just as much for labor to spread poor paint as pure paint; frequently the cost of the paint is just as high; at best so little can be saved that it is never worth while.

When you want paint information in detail the "Carter Paint Calculator" will give it to you. How to figure the cost of paint, estimating, color formulae, paint failures and remedies and many other definite answers to specific questions are given in this book. It will be sent to any contractor or architect with our compliments on request.

CARTER WHITE LEAD CO.

West Pullman Station "B"

CHICAGO, ILLINOIS



The MAN who Buys it

"I saved money and got a good job. DEVOE took fewer gallons. The guarantee formula on the can convinced me DEVOE was all pure paint and would wear longer."

(Signed) *Every Property Owner*

DEVOE

The oldest manufacturing concern in the United States
Founded in New York in 1754

F.W.DEVOE & C.T.RAYNOLDS CO. NEW YORK
DEVOE & RAYNOLDS CO. CHICAGO





THE "EXPERT'S CHOICE FILE"

Does twice the work of the ordinary file — in half the time.

Figure this out:

How much of your time is worth 25 cents? How long does it take you to file a saw with an ordinary file? By cutting your filing time in two, and still enabling you to file twice as many saws, the EXPERT'S CHOICE increases the value of your time by over 50%. By spending 25 cents you can make it back on your first filing job alone.

It's in the Quality—in the cut of the tooth and in the length of stroke.

Frank Luther, Chicago, says:

"The Expert's Choice File files 18 hand-saws and is cheaper at a cost of 50 cents than the ordinary file at any price."

Delta Saw Files are made for fine or coarse teeth. Also for that extra hard saw. Buy your tools of the dealer who sells Delta Files. He is a quality man.

You get your money back if the Expert's Choice does not prove to be the most economical file you have ever used.

TRIAL OFFER

If your dealer cannot supply you send us 15c, 20c or 25c for trial file sent prepaid. Do this today—you'll find out what a real file is.

DELTA FILE WORKS
PHILADELPHIA, PA.



Look for this sign at your hardware store. Delta Hand Saw Files can be found at the best tool stores at prices quoted on this card.

manager. At the afternoon session interesting papers were presented by R. H. Page of the foreign trade department, and C. H. Gagen, of the Chicago office. Gustave Kahn, manager of sales department, outlined in a most impressive way the program for the work of 1917.

Everyone voted the convention the most enjoyable and successful one ever attended and returned to their homes better equipped with valuable information and enthusiasm for the coming year. The year 1916 marked the close of the greatest year in the history of the Trussed Concrete Steel Company, and plans for 1917 are to excel this record.



Great Bell Pipeless Furnace

The furnace shown in the accompanying illustration is the pipeless type No. 62 furnace of the American Bell and Foundry Company, of 27 Cady St., Northville, Mich. This furnace is constructed especially to be used without hot air pipes, the top being made with a 14 by 20-inch opening to be connected with a 14 by 20-inch register directly over it.

The hot air passes thru this register with great force to the room above. This air ascends rapidly to the ceiling and is distributed to the other rooms quickly and evenly so that the temperature varies very little in the different rooms of the house.

Cold air is taken in at the base thru slides furnished for that purpose, or in many cases by the use of one or more cold air pipes from registers placed in some farther room. The casing is of galvanized iron, lined with asbestos and corrugated tin. The radiator weighs 320 pounds and is made of cast iron. It is easy to clean out and is of sufficient capacity to provide for a

heating of from 15,000 to 20,000 cubic feet of air for a dwelling house up to 25,000 cubic feet in a single room building. The square ash pit is large and easily cleaned. The total weight of furnace is 1200 pounds.

One of the special features of the furnace is the fire pot, which is made larger at the bottom than at the top, so that no ashes will accumulate on its sides. The fire pot measures 21 inches at the bottom and 20 inches at the top, inside, and weighs 175 pounds.

Another of the special features is the ball bearing grate. This is a draw center and shaker pattern with double ring, the outer being independent of the inner. Slight shaking three or four times to right and left eliminates all ashes, and clinkers can be pushed thru by pulling out draw center. The furnace is especially adapted for burning soft coal, as the radiator and dome construction make gas and smoke combustion nearly complete. It will also burn hard coal and coke successfully.

The line of furnaces manufactured by the American Bell and Foundry Company is very complete. The company wishes to get in touch with live builders in every community.

(Trade Notes Department Continued to page 156)



Great Bell Pipeless Furnace.

\$10.

**Brings This
Improved
ALOE
Convertible
Level**

12 Inch
Telescope
Magnifies
18 Diameters

Sights Above
and Below
the Horizontal
Can Be
Taken

Horizontal
Circle 4-in. In
Diameter
Numbered
0 to 90 Degrees
Each Way
With Vernier
Reading to 5
Minutes

Combination Level
and Transit
Absolutely
Accurate — Satis-
fies Requirements
of Most Exacting
Engineers

So Simple That
Those Without
Technical
Education Can
Operate It

A.S. ALOE CO.
ST. LOUIS, MO.

\$10.

Brings This

ALOE CONVERTIBLE

Yes—Only \$10.00—

Think of it—for only \$10.00 we will send this latest improved Aloe Convertible Level just to prove to your complete satisfaction that it is an instrument you can't afford to be without.

The picture we here show you of the Aloe Convertible Level is as accurate as a photographic reproduction can be made—

The description of the instrument which we give you and our statements of the work that can be done with it are absolutely accurate in every respect and to the smallest detail—

On the back of this circular we show you the kind of work contractors and engineers do with the Aloe Convertible Level and print a few letters telling what they think of it—

But—neither the picture, nor the description, nor the enthusiastic words of praise of users will so **convincingly** prove the **real merits** of this remarkable combination level and transit as an actual trial of the instrument itself.

When you have it in your own hands, make a careful examination of its scientific construction and many new and improved features; and finally when you take it out, set it up and put it to the test for accuracy and convenience in doing any kind of leveling work—then, and not until then, will you know for an **absolute certainty** that the ALOE is the **best** convertible level you could possibly buy—that it is, without a question of doubt, the

Biggest Level Value Ever Offered!

That's a fact! And the wider a man's experience has been with levels and transits the more readily will he admit the absolute truth of this statement. For there never before has been a convertible level constructed of such high grade material, of such fine workmanship and finish, so complete in every particular, and of such absolute accuracy that has ever sold at such an astonishingly low price—on such easy terms.

We can afford to give you a bigger, better level value because we **make** the instrument and sell direct to the man who uses it. There are no middlemen's and dealers' profits for you to pay. Therefore, you get an absolutely high grade, accurate combination transit and level at actually a bargain price, and if, after a thorough trial, you decide to keep it you have nearly a year in which to pay for it.

YOU Need It

If you ever have occasion to determine differences of elevation—

Or leveling buildings, foundations, streets, walks, roads or curbs—

Or to run straight lines for irrigating, ditching, draining and laying out tiles—

Or to run boundary lines for fences—set out trees and groves—survey lots and fields—

Or to line up interior work—or get all the various angles and levels you need from day to day—

For any of these uses you **need** an Aloe Convertible Level.

It is a level when you want a level—a transit when you **need** a transit. It takes sights either above or below horizontal. No matter how skilled an engineer you may be—how important your work **may** be—how great a pride you take in the accuracy of your work—or how critical you are of the instruments with which you do your work—the ALOE CONVERTIBLE LEVEL WILL MEET WITH YOUR MOST EXACTING REQUIREMENTS.

And yet it is so simple in its construction—the directions for its use are all so clearly explained—and they are so easy to follow—that even a man **without technical training or experience of engineer or surveyor** can obtain **absolutely accurate results** with it.

YOU Save \$5.00

The regular cash price of ordinary Convertible Levels, as sold by dealers, is \$65.

Our price for the ALOE CONVERTIBLE LEVEL is only \$60. But all you need send now is \$10.

You would save \$5 even if you paid all cash for the Aloe.

But we do not ask you to send all cash in advance for it. Send only \$10—we will ship the instrument to you promptly, subject to your examination and approval.

A. S. ALOE CO., 624 Olive Street, San Francisco

isatest Improved VERTIBLE LEVEL \$10.00—To Pay Now! Try It 10 Days

When the instrument arrives, use it for 10 days at our risk. Subject to the most exacting tests you can think of. See with what minute accuracy you can level up a wall or foundation—or grade a walk—or lay a line for an irrigation ditch—or survey a lot—or for any similar work where absolute accuracy of measurements is required. Why, it is so accurate that you can detect an error of 1-16 of an inch in 300 feet!

Examine, too, its construction. Notice the high grade material of which it is made—the expert workmanship—the freedom from complicated and unnecessary parts and attachments. Note, too, how simple it is in its operation. Then if, at the end of 10 days, you are perfectly satisfied that the Aloe Convertible Level is by long odds the best instrument you can get for doing your work to your entire satisfaction and that it is profitable for you to own it, keep it and pay the balance (\$50) in monthly payments of \$5 each. If not perfectly satisfied, just return it to us at our expense and we will immediately refund your \$10.

Why Pay More?

No other convertible level at anywhere near the price begins to compare with the ALOE either as regards material, workmanship, finish, accuracy, or all-around adaptability and efficiency. And you can't afford to buy a cheaply constructed level at any price.

On the other hand, it is not good business—nor is it necessary—for a man to invest a big sum in a highly complicated instrument so cluttered up with attachments for this, that and the other purpose that only a trained expert can use it.

The Aloe Convertible Level will do accurately all the work you ever have for either a transit or a level. This we positively guarantee—and leave you to be the sole judge.

SEND NOW!

Tear off coupon on next page and mail it to us today with \$10.00 and prove for yourself that the Aloe Convertible Level is just the instrument you have been waiting for. You run absolutely no risk—if you are not more than satisfied at the end of a 10-day trial, just return the instrument at our expense and get your money back without question. If the trial convinces you that it is the biggest Level value ever and that you can't get along without it, simply pay the balance at the rate of only \$5 a month for 10 months. You have everything to gain—nothing to lose—we assume the responsibility. So send coupon right now—TODAY.



ALOE CONVERTIBLE LEVEL SHOWING
SUN SHADE ATTACHMENT

Here you see the level with the telescope in converted swinging position for taking vertical readings, etc.

When the instrument is used for leveling, the telescope is reversed and placed on the fixed bearings on each side.

This level permits a much larger range of work than can be done with the ordinary architect's level.

The construction is such that sights above and below the horizontal can be taken.

For taking vertical sights, the instrument is provided with standards which are permanently attached to the cross-bar by a large screw; the telescope, which is fitted with a permanent axis, rests on the top of standards, and owing to its special construction the instrument can be used for leveling while in this position if desired. This attachment is so arranged that it does not interfere with the telescope in its normal position in wyes when used for traveling.

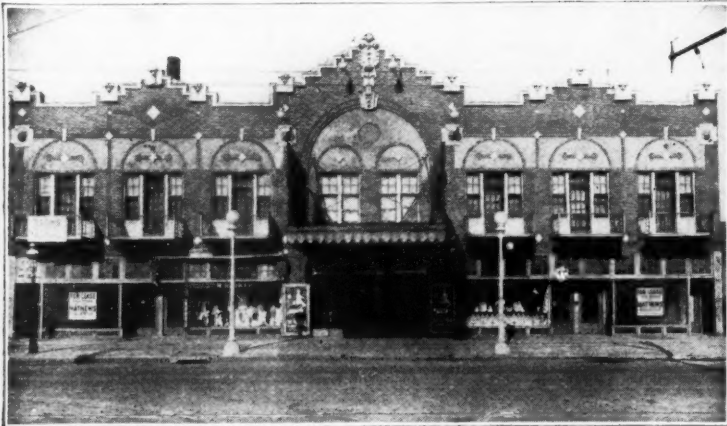
SPECIFICATIONS

"Telescope:" Length 12 inches, magnifying power 18 diameters, achromatic terrestrial of good definition focussed by rack and pinion. The eye piece has a spiral motion for accurately focussing the cross hairs. The bubble to telescope is 5 inches long and graduated to facilitate leveling up. Tangent screw is of improved style. Horizontal circle, diameter 4 inches, graduated to degrees, numbered 0 to 90 each way with vernier reading to 5 minutes. The instrument packs whole and stands erect in a nicely finished box, which is provided with a lock and strong leather strap, and contains a metal trivet for setting up level where use of tripod is difficult. Adjusting pins, plumb bob and sun shade with tripod.

Makers Since 1860 of High Grade
Surveying and Engineering Instruments

St. Louis, Mo.

You, Too, Can Obtain These Results With An Aloe Convertible Level



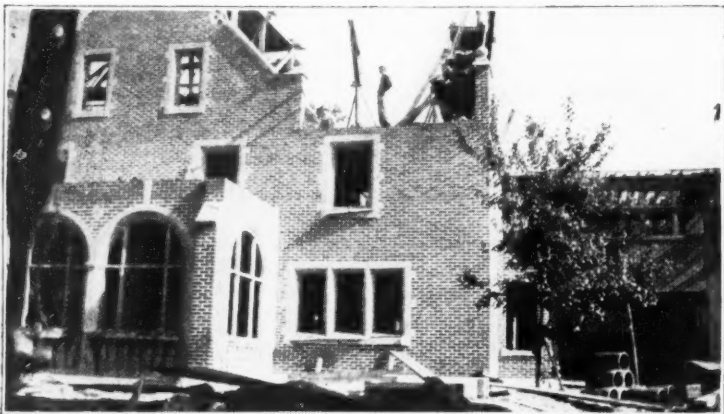
A. S. ALOE CO.,
St. Louis, Mo.

Gentlemen:—

The Convertible Level I purchased from you has met all requirements in every respect.

Having done all that you claim for it, I can conscientiously recommend it, and it seems to me your liberal selling plan should bring the Aloe Level within the reach of anyone who has occasion to use an instrument of this kind.

Yours very truly,
NORMAN B. HOWARD.



The A. S. ALOE CO.,
St. Louis, Mo.

Gentlemen:—

The above is a picture of a \$40,000 job I completed in 1916, and the Aloe Level was used exclusively on this building. It is a very good instrument and I can recommend it highly.

Respectfully,
EARL VAN FLEET.

A. S. ALOE CO., 624 Olive St., St. Louis, Mo.

Gentlemen:— Enclosed find \$10.00. Please send me one fully equipped Aloe Convertible Level. If I find it perfectly satisfactory and decide to keep it I agree to pay the \$50 balance in ten monthly payments of \$5 each until your special price of \$60 is paid in full. Otherwise, I will return the Level to you inside of ten days after it arrives, you to return to me my \$10.00. It is understood that you will not charge me anything for the use of the Level during the ten days it is in my hands.

Name

Address



A. S. ALOE CO., St. Louis, Mo.

Gentlemen:—

We are mailing you three photos of buildings that we have used the level on. We have used it on quite a number of others that we have no photos of.

We consider this level the best we ever saw for the money, and it will easily do the work of a high-priced level.

Very truly yours,
MACOUPIN CO. CONSTRUCTION CO., Inc.
By R. L. WATKINS, Secy.



A. S. ALOE CO., St. Louis, Mo.

Dear Sirs:—The Covertible Level has been of great value to us in our work, as we have had some big work to do. We find it a great help and time-saver in leveling up foundations and all kinds of surveying work. We would not be without it again for the money it has cost.

Respectfully,

BAUMSTARK BROS.
Per JOSEPH BAUMSTARK.

Contractors and Builders



**HERE'S THE
COUPON—**

**Mail it Today and Try
The Aloe Convertible Level
10 DAYS FREE**

Better Roofs

When Laid With --



Zinclad
RUSTLESS NAILS

Place yourself on the safe side by using only Zinclad Rustless Nails on every roof. They are easy driving, tight holding and superior in every way to ordinary nails. Sold only in five pound cartons. Get them from your local lumber dealer with every purchase of shingles.

W. H. Maze Company
Peru Illinois

Devoe Brush Exhibit Fascinating

So attractive was the display and so interesting the process of making Devoe brushes that police had to be called to break a path thru the spectators jammed in front of the Devoe paint, varnish and brush exhibit at the Hardware Convention Exhibit at Madison Square Garden, New York.

Three brush makers worked steadily in the Devoe booth from noon till 10:30 and Mr. Hardware Merchant was just as interested in watching as Mr. General Public.

Devoe is the oldest manufacturing concern in America. They have been making good paint for 163 years—since 1754.

Even knowing this, many visitors were surprised to see two generations of Devoe brush makers at work in the booth.

Attention was called to the Guarantee Formula labels printed on Devoe varnish and paint. This is an exclusive Devoe feature—no other varnish manufacturer, it is said, prints formulas on cans.

"Quality First" has always been the Devoe motto, and their reputation and standing in the trade and among consumers proves that Devoe quality and service are responsible for 163 years of successful business.



The Advantages of a Small Mixer

The foundation, particularly the small foundation, is often a source of annoyance. Small contractors feel that their requirements are hardly sufficient to make a mixer pay, while large contractors who often run into a small job do not like to haul their large mixer on such a job and put it into operation where there is so little concrete to be poured.

This condition has created a field for the Ideal Cincinnati No. 5 batch mixer, which is manufactured both as a two-wheel outfit, with loading platform built on, and as a four-wheel outfit, as shown in the illustrations. This mixer is manufactured by the Ideal Concrete Machinery Company, 1308 Monmouth Ave., Cincinnati, Ohio. The capacity of this mixer is 5 cubic feet dry materials, which requires just one-half sack of cement to the batch.

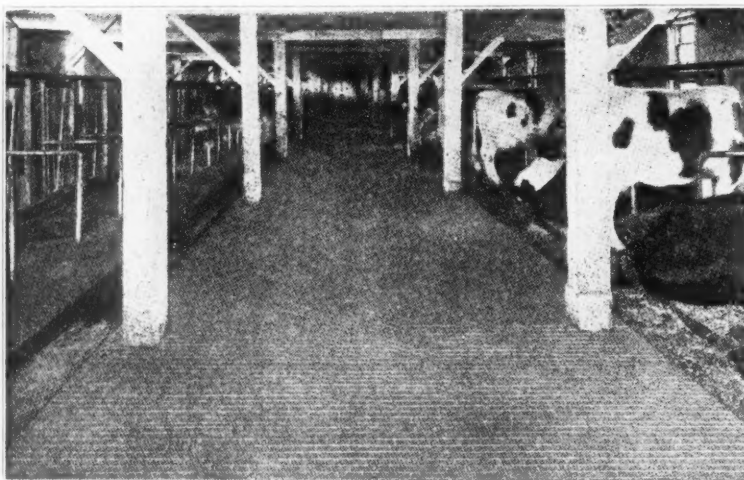
(Continued to page 158.)



The Ideal Cincinnati No. 5 on a Foundation Job.

KREOLITE WOOD BLOCK FLOORS

The Ideal Floor for Cow Barns, Stables, Piggeries and Sheep Pens



Kreolite Wood Block Floor in Cow Barn, Walker & Sons, Walkerville, Canada

Veterinarians, Agricultural Colleges, Dairy Farmers and Stock Raisers throughout the country use and endorse Kreolite Block Floors.

Specifications for laying, samples and barn floor booklet are yours for the asking. Write today

THE JENNISON-WRIGHT COMPANY

2472 Broadway

Toledo, Ohio

Hundreds of prominent builders and barn owners have realized that the sanitary Kreolite Block Floors in their barns and stables are paying them better returns than the ordinary six per cent.

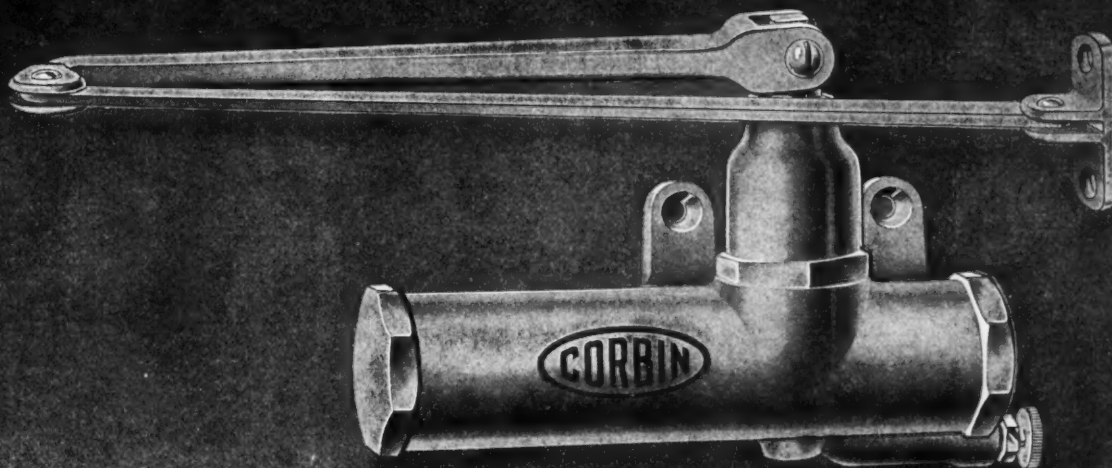
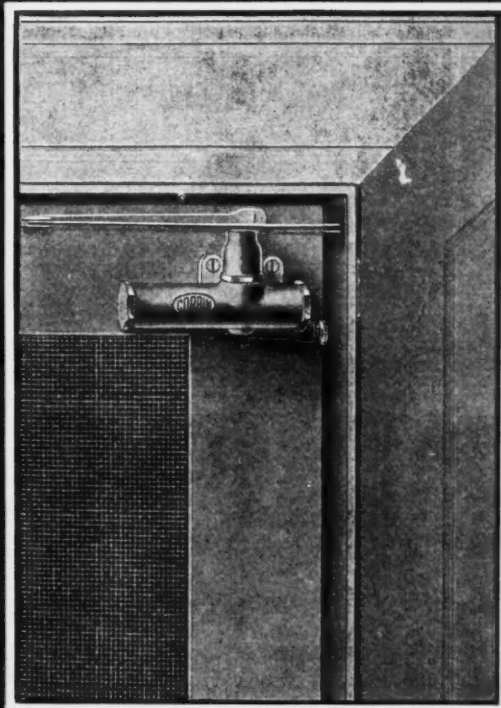
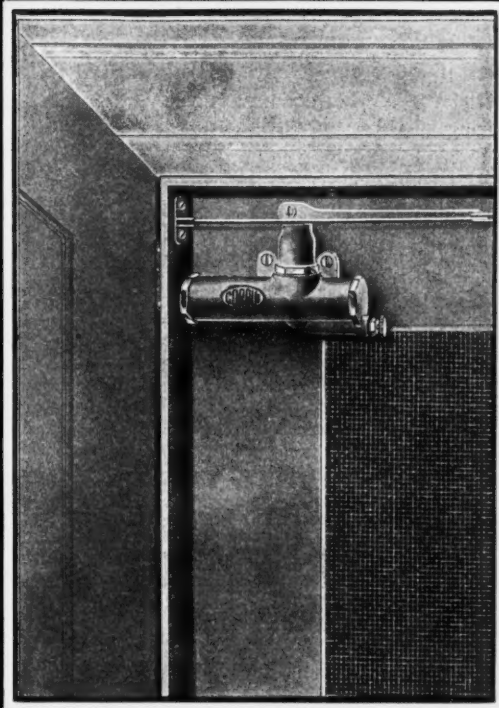
Kreolite Blocks are manufactured from select Long Leaf Yellow Pine and impregnated under heavy pressure with an antiseptic preservative, making them impervious to moisture or acids and proof against decay. The blocks are laid so that the wear comes on the end of the grain, hence they wear like a mallet; will outlast three or four plank or concrete floors.

The oil in the blocks is death to insects, or vermin, thus helps in freeing stock from the pests, preventing diseases.

Kreolite Block Floors are warm and comfortable, preventing any stiff joints, sore knees or rheumatism so common on concrete floors.

Every Kreolite Wood Block Floor laid is an asset to the builder, for it is sure to please the owner.

The floors are easily laid; any good workman can lay the floor by following simple instructions.



THE CORBIN SCREEN DOOR SILENCER

We believe this to be superior to any other Screen Door Check on the market. It has the same checking mechanism as the other Celebrated Corbin Checks, and is made with two sizes of springs for light and heavy doors. It is right or left hand without change, and works equally well in either direction. It requires only three inches of space between the screen door and entrance door, is easily applied, easily adjusted, and requires no attention. It can be sold at popular prices, and is certain to have a large sale.

Any Corbin dealer can give full information—or write us for particulars.

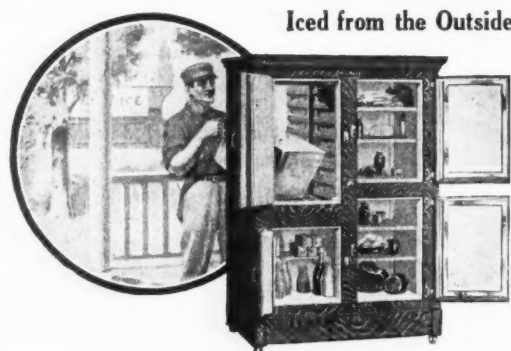
P. & F. CORBIN

The American Hardware Corporation, Successor
NEW BRITAIN, CONN.

NEW YORK

CHICAGO

PHILADELPHIA



For Every Type of Building

Whether it is the finest hotel, public building, private residence, modest cottage or bungalow, there is a McCray refrigerator either in stock sizes, or made to order that exactly meets every need. The outside door for icing is an ideal arrangement.

MCCRAY SANITARY Refrigerators

Have been used in the finest residences, hotels, clubs, restaurants and public institutions for over thirty years. They have given complete satisfaction because they are scientifically constructed, producing efficient refrigeration.

The McCray patented system of refrigeration maintains a constant current of cold, dry air through every compartment. The lining of opal glass, white enamel and odorless wood are sanitary and easily cleaned.

Architects and builders realize that McCray refrigerator makes their building complete in every detail and they provide for them in their plans.

Suggestions and Plans Sent Free to Architects and Builders

Our special drafting department is ready to co-operate with you, furnishing ideas and suggestions for any kind of refrigerator equipment.

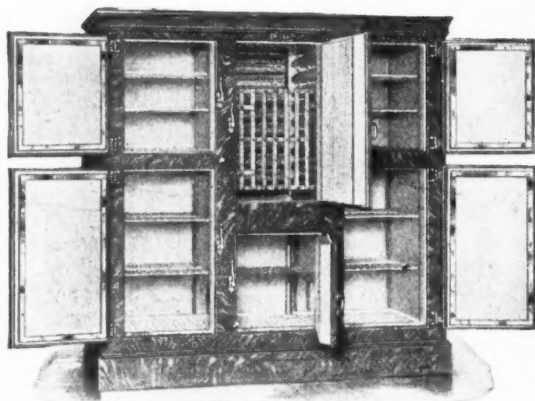
Get These Catalogs for Your Files

- No. 92 for Residences.
- No. 51 for Hotels, Clubs and Institutions.
- No. 70 for Grocers.
- No. 62 for Meat Markets and General Storage.
- No. 74 for Florists.

McCray Refrigerator Co.

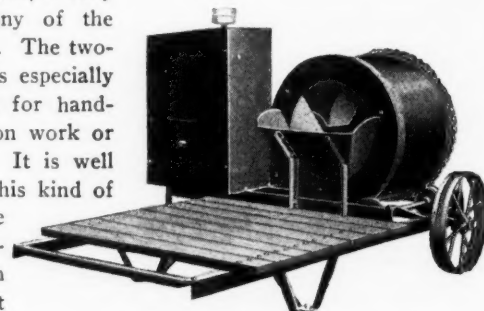
760 Lake Street Kendallville, Indiana

Agencies in all principal cities



This is just the right size for handling small work, for while this mixer will mix 45 to 50 cubic yards of concrete in an ordinary day's run (far more than is required for the average foundation job), still it is small enough and light enough to be conveniently handled, so that it is easily hauled from one job to another, or moved around on the job. In fact, it is easily placed upon the forms, so that the concrete can be discharged directly into the wall without any wheeling or shoveling.

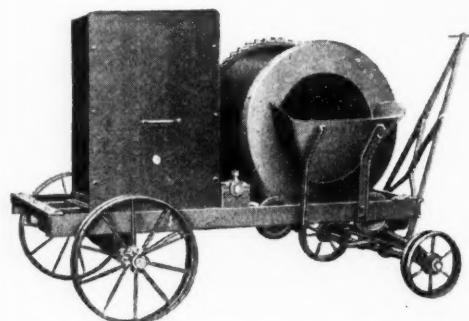
Both the two and four-wheel outfits are of the low charging type and their construction thruout, for the strength and wearing qualities, is fully equal to any of the larger mixers. The two-wheel outfit is especially recommended for handling foundation work or similar jobs. It is well adapted for this kind of work because a large loading platform has been built on so that the materials can be wheeled



This Two-Wheel Mixer is Well Adapted to Foundation Work.

directly onto the platform and discharged into the mixer from the wheelbarrows. The platform is large enough to permit a man with a wheelbarrow to turn around on same or to accommodate a water-barrel or some sacks of cement. The two-wheel outfit is fitted with standard gauge trucks and can be hauled behind a wagon over rough roads.

This mixer is also coming into favor for large contracting jobs, as it is more economical in some instances to place these

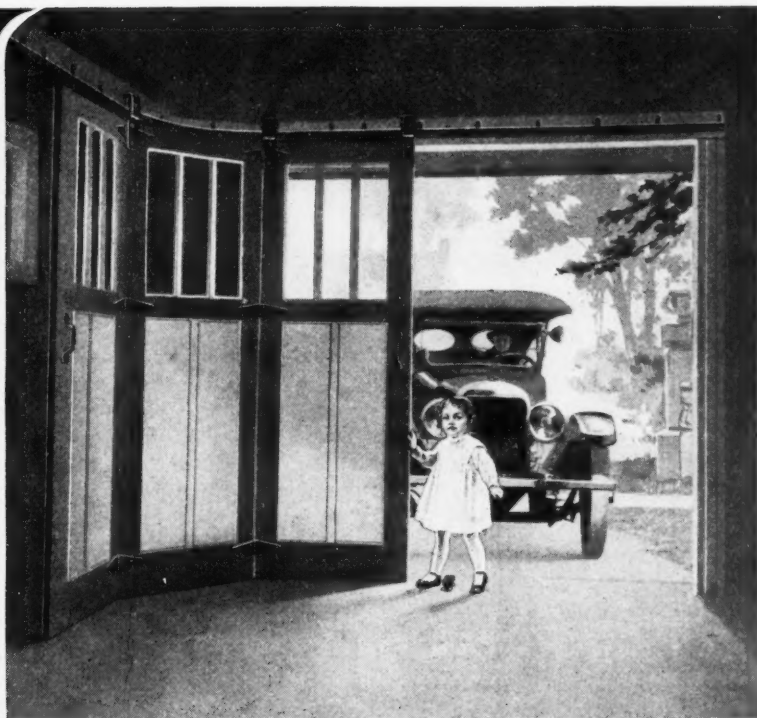


The Ideal Cincinnati No. 5 on Four-Wheel Truck.

small mixers around on the job and mix the concrete at the spot where it is to be placed than to have a large mixing plant and a complex distributing system.

In constructing Cincinnati's Speedway last summer Contractor Edward Ryan effected a great saving in pouring the 8000 concrete supporting columns for the race track by using three Ideal Cincinnati No. 5 mixers.

The big mixer is extensively advertised and contractors have for years been educated into its use, but of late years they are laying aside their prejudice against the small mixers and find that they do thoro work at a lower mixing cost because practically each part of the job is handled as a separate unit and works independently of the rest, whereas a mixing plant for the job, as a whole, must be operated, even when a small slab is being poured, in a far-off corner. Furthermore, contractors find that the erection and manipulation of a distributing system necessary for a central mixing plant is a burden and expense that can be eliminated on a great many jobs.



The Most Convenient Garage Door Hanger Made

LOUDEN



Here's What You Get

- No. 1. Track supporting brackets riveted on for 6, 8, 10 or 12 foot door, as specified.
- No. 2. Three swivel-jointed, roller bearing trolleys.
- No. 3. Six durable 6-inch strap hinges.
- No. 4. Two adjustable floor stay rollers to guide the door and hold it in place at the bottom.
- No. 5. One wall stay roller to keep the door from binding on the side wall.
- No. 6. Two heavy, well shaped door handles.
- No. 7. Three-eighths pound special barbed nails for putting up track.
- No. 8. Seventy-two screws for hinges, handles and stay rollers.
- No. 9. One hasp and staple.

No Lumber is Furnished
Complete directions for building and erecting door accompany each set of hangers.

It Meets Every Condition Perfectly---Convenience, Safety, Space Economy, Beauty of Design, Ease of Operation, Permanence, Cheapness.

The door is made in three panels, stoutly hinged together, supported by swiveled, roller bearing trolleys which operate on a continuous steel track.

The track extends across the door opening, inside, and along the adjoining wall, curved at the corner. The door slides smoothly around the corner—doesn't cut off an inch of valuable space—and when open lies flat against the side wall out of the way.

The Louden-Hung Garage Door overcomes the disadvantages of clumsy swinging doors and posts in the yard, and solves permanently the problem of the inside sliding garage door.

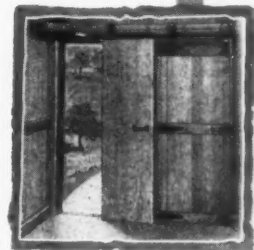
A DOOR WITHIN A DOOR

An extremely valuable feature of the Louden-Hung Garage Door is the hinged section, which makes a separate foot entrance unnecessary. A small door for the man and a large door for the car, all in one, is an exclusive, Louden-patented feature—absolutely new in garage door construction. The convenience, safety, and handsome design of the three-panel Louden Equipped Garage Door makes it popular with wealthy owners of fine garages. Its inexpensiveness makes it popular with those who wish to economize.

Specify this hardware for the garages you build. It will insure lasting satisfaction and bring you new contracts.

Write for complete illustrated booklet of garage plans and garage door information.

1867 — THE LOUDEN MACHINERY CO. — 1917
5511 Court Street, Fairfield, Iowa



Swinging section of Louden-Hung garage door permits individual entrance and exit without moving entire door.



When open the Louden-Hung garage door lies flat against the inside wall—entirely out of the way.



This little booklet tells the whole story. Mailed postpaid on request.

New Builders Hardware Catalog Ready

The 1917 builders' hardware catalog of the National Manufacturing Company, Sterling, Ill., is ready for distribution. Its pages present a line of high-grade builders' hardware which is even more complete than what has heretofore been offered.

In addition to the hardware shown in the 1916 catalog there have been added a garage door latch, screen door pull, beveled edge push plate, garage door set, garage door holder, chain bolt, foot bolt and loose pin reversible "T" hinge.

This hardware is sold thru the retail dealers who are assisted in every way by the company. The variety of articles included in the stock of the company, together with the size of the stock, make it possible for the retail dealers to obtain hardware in shipments of 200 pounds or more, thus securing the benefit of a liberal freight allowance, without delay, it being the policy of the company to ship goods the same day order is received. Goods are packed with special care so that all hardware is sure to come to the builder in the best of condition.

Go to your local dealer today and refresh your memory by a careful examination of the 1917 catalog. If he hasn't obtained his copy yet let him know that you are waiting for him to do so, or write the National Manufacturing Company at Sterling, Ill., telling them who your dealer is and where he is located.



Automatic Stucco Machine Improved

The illustration herewith shows the handsome new residence of C. M. Nicholson, Ossining, N. Y. The entire exterior is finished in stucco and all the work was done at a great saving in cost of labor and material with the Automatic Stucco machine. The stucco finish was made with white



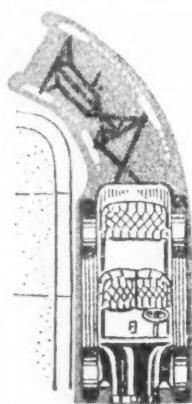
Residence of C. M. Nicholson at Ossining, N. Y. Stucco Put on by Machine.

marble grit, mixed with about 20 per cent of red marble grit and black mica.

The Automatic stucco machine throws the stucco from a receptacle by means of springs, which are attached to a center wheel and turned by hand. A number of improvements in the springs have been made recently. These springs are now made wider at the bottom, where they are fastened at the center wheel, and are then tapered toward the top, thus making them stronger and giving them much longer life.

Another improvement is a controlling device that fits over the end of the hopper to prevent scattering of the stucco, and is so arranged as to confine the material to any point toward which it is thrown. The stucco can then be thrown exactly where it is wanted. This feature prevents loss of material and saves labor. This machine is also specifically adapted for pebble dash work, as it throws the pebbles with great force and securely embeds them in the stucco. Good pebble dash work cannot be done by hand.

Further particulars can be obtained from the Automatic Stucco Machine Company, 51 E. 42nd St., New York, N. Y.



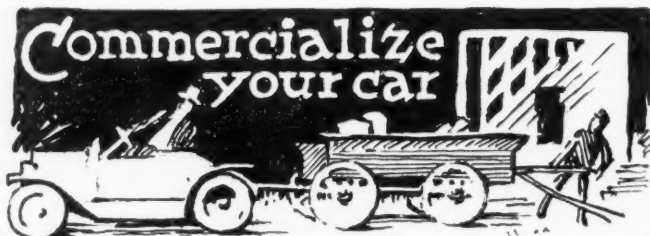
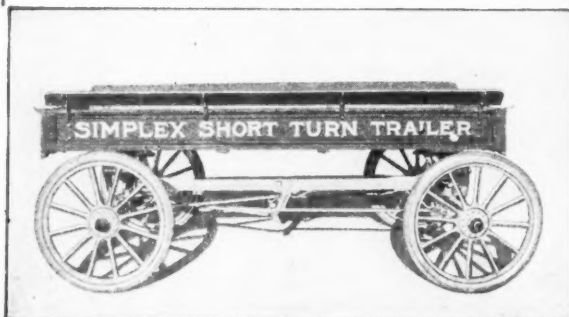
--a trailer that "trails"

Simplex Trailer

It follows the "trail" of the automobile so positively that both vehicles can turn in a twelve-foot circle. It isn't necessary, with a Simplex to take to the middle of the street to avoid bumping into curbs or swinging the trailer into everybody's way.

The Simplex is ideal for the contractor who wants to get the most out of his automobile. He can preserve the appearance of his car for pleasure; and at the same time put it to work. Any automobile that will average 20 miles will carry the Simplex along at the rate of 19 miles. Write for our catalog.

Simplex Short-Turn Trailer Co.
AUBURN, IND.



Use It on the Job

Make it a Valuable Asset as well as a Convenience

Miami Trailers

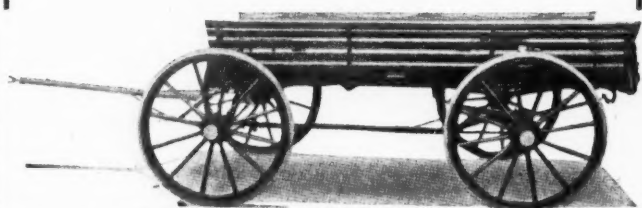
enable the carpenter or builder to solve his hauling problems without extra expense or injury to his car.

They are equipped with a special shock-absorbing draw bar, attached to the chassis (not the axle) of the car and which prevents any strain in starting or stopping the car. The axles and bearing of the Miami are of the same grade as is used in automobile construction.

The Miami Trailer is made in several designs and special bodies can be furnished to meet the requirements of your hauling propositions.

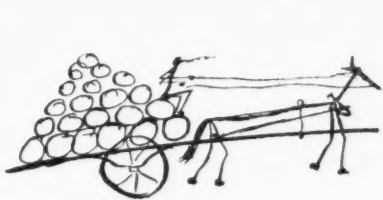
Write for prices and descriptions.

MIAMI TRAILER COMPANY
TROY, OHIO

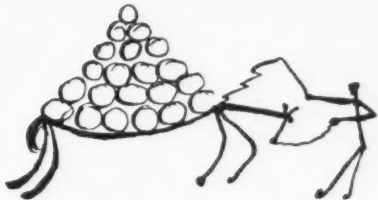


WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Can't a Horse Pull More Than He Can Carry? Can't a Locomotive Engine, a Tugboat and an Automobile?



A horse can pull a ton.



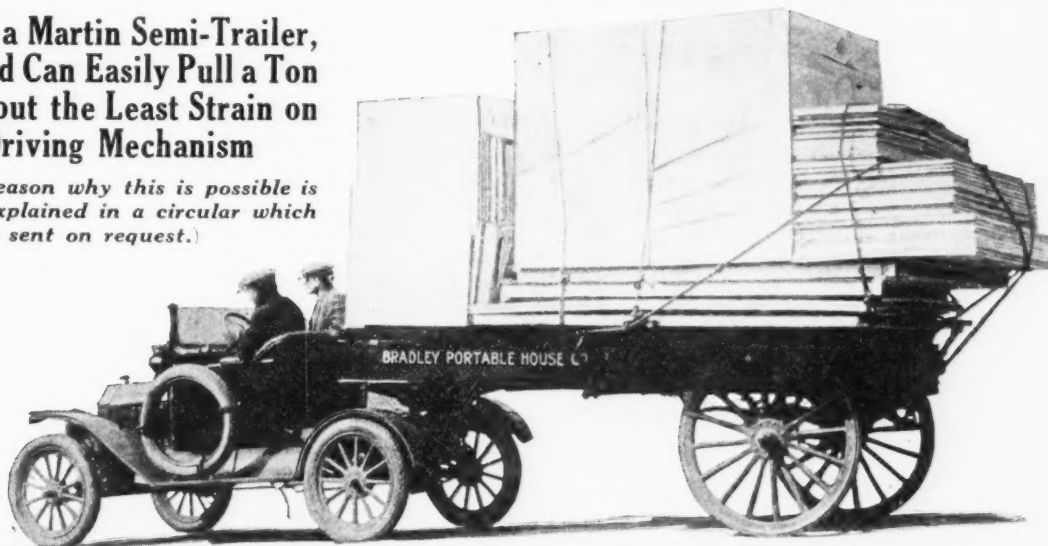
He'd have hard work carrying that much.



A light roadster might carry it for awhile, but it would soon break down.

With a Martin Semi-Trailer, a Ford Can Easily Pull a Ton Without the Least Strain on the Driving Mechanism

(The reason why this is possible is fully explained in a circular which will be sent on request.)



The Martin Semi-Trailer and Ford Combination make the lowest priced one-ton truck in the entire commercial car field. It is very little longer over all than the conventional truck of the same loading space.

**The
Only
Trailer
that is
100%
Efficient
Because:**

It can be backed, turned and handled with ease in the narrowest quarters. (Unless a trailer can be backed and manipulated in freight yards and narrow spaces it is far from being 100% efficient.)

It allows sufficient weight for traction.

(Unless there is enough weight for the driving wheels for traction they will slip on the wet asphalt ice and snow. With the Martin-Semi Trailer enough weight is carried on the driving wheels for traction.)

The Ford and Semi-Trailer combination make a unit, and is permitted on all streets and ferries. (Some cities have legislated against the use of four-wheel trailers, but in no case does this adverse legislation apply to the semi-trailer.)

The Martin Semi-Trailer was designed by automobile engineers. It is high grade in material and construction and can easily carry a ton. A Ford used as a tractor can easily draw a ton. The Rocking Fifth Wheel connects with the Semi-Trailer Ford Roadster. The connection can be made and unmade instantly. It enables the Ford to be used either as a commercial vehicle or as a pleasure car at will, since the Ford is not mutilated in any way.

It Puts Hauling Costs at—

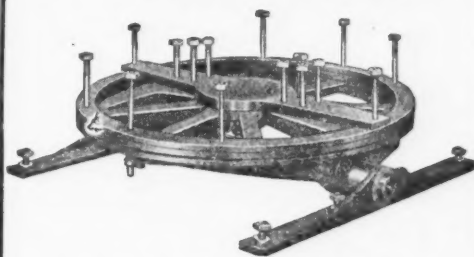


the lowest level ever known.
The Fifth Wheel and Semi-
Trailer together cost only

\$195

Made in nine and twelve-foot bodies

Contractor-Builders



Martin's Patent Rocking Fifth Wheel is made in four sizes:

Ford or Light Roadster size is 18-in. circle complete. Makes tractor semi-trailer 1 ton capacity. Price \$35.00.

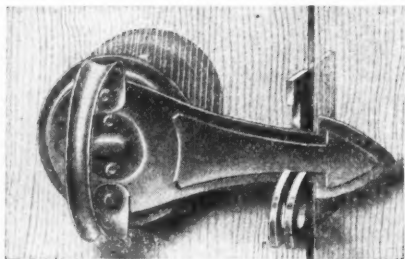
24-in. circle complete, \$65.00. For one and two ton trucks. Makes tractor semi-trailer 2-4 tons capacity.

30-in. circle complete, \$85.00. For two and three ton trucks. Makes tractor semi-trailer 6-8 tons capacity.

36-in. circle complete, \$110.00. For five and six ton trucks. Makes tractor semi-trailer 10-12 tons capacity.

Send for Special Fifth Wheel Circular.

MARTIN ROCKING FIFTH WHEEL CO. Dept. A
SPRINGFIELD, MASS.



Protection Against Thieves and Prowlers

Safeguard the building against all intrusion and win the lasting confidence and good-will of your client. The owner of barn, garage, granary or warehouse expects protection not only from the weather, but protection against thieves and prowlers as well, and

The McKINNEY Door Latch

affords that protection. Doors equipped with this new wrought steel latch and a dependable padlock are impassable. And the latch can't be taken off or tampered with in any way because all screws are concealed when door is closed.

This latch is made in only one size and consists of but four simple parts, yet it can be used on either right or left hand sliding or swinging doors and is easily adjustable to doors from 1 $\frac{3}{4}$ " to 2 $\frac{3}{4}$ " thick.

All parts of the McKINNEY Door Latch No. 1920 are first electro-galvanized and then japanned. It is easy to attach, has no springs to break or wear out, and is easily operated from either side of the door.

Ask your dealer to show you this new door latch—use it on your next garage or farm building and protect your client. Write now for Builders' Catalogue A-11.

McKinney Manufacturing Company
Pittsburgh, Penna.

Two Truck Economies

Two arguments made in behalf of the motor truck lie in its superior cleanliness over horses and in the fact that it can be housed in about one-third the space.

Statisticians are busy proving that the street cleaning bill of American municipalities could be cut down one-half by the elimination of horses.

"A recent purchaser of Kissel trucks, who had been hard to convert from the horse haulage method, was finally influenced by the fact that they would take up about one-third the stabling room occupied by his horses," says H. P. Branstetter of the Kissel Kar. "He figured that he could use the additional space to much better advantage both from a pecuniary and sanitary standpoint."



The Asphalt Shingle Market

Manufacturers of prepared roofing materials have long been forced to sell their products to a limited class of buyers—those who wanted the material for purely utilitarian purposes—and thus the materials were used only on temporary structures, on barns, sheds, railroad buildings, warehouses, etc. The materials were durable enough, but not sufficiently artistic and attractive for use on the average dwelling house.

The advent of the asphalt shingle, however, opened up an entirely new field for prepared roofing manufacturers. Slate surfaced roofing was a forerunner to the asphalt shingle, and while it was more attractive for a roof than the old type of black, prepared roofing, it did not combine enough attractive elements to make it generally saleable.

The next logical step in the evolution of prepared roofings was the asphalt shingle, and so evident were its advantages that it leaped into instant popularity, and manufacturers were hardly able to make enough of them to supply the heavy demand. It is durable, attractive in appearance, and has fire-resisting qualities which are not present in the older kinds of roof materials.

In 1904 about 17,500,000 squares of wooden shingles were marketed. By 1914 this production had decreased to 14,430,000 squares, whereas in the same period of time the production of prepared roofing materials increased from 3,267,000 squares in 1904 to 11,100,000 squares in 1914. It is interesting to note that the greatest increase in production of prepared roofing materials has occurred since 1909—or since the asphalt shingle began to be a factor in production. From 1909 to 1914 this production increased approximately 5500 per cent.

The above figures are published by the United States Department of Agriculture, and were compiled by the Forest Products Laboratory, University of Wisconsin.

The next logical step in the manufacture of asphalt shingles was the attempt to overcome various objections to the individual shingle by making them in multiple units that could be handled as easily as the individual shingles.

The Flintkote Manufacturing Company, Boston, Mass., successfully solved this problem when they began the manufacture of Rex Strip Shingles. Rex Strip Shingles may be called "four-shingles-in-one." Their use reduces labor costs and also means a reduction in nails. Only five nails are required for each Rex Strip (four shingles in one), whereas eight are required in four individual asphalt shingles. The strip construction also makes a tighter roof than individual shingles, because there are no spaces beneath the shingle courses to admit wind and water. Yet the finished roof looks exactly like a roof of individual shingles; the strips are slotted in a way that gives the individual shingle appearance when laid.

The Flintkote Manufacturing Company has already discovered that the possible market for Rex Strip Shingles is only limited by the number of buildings that will admit of shingle roofs—and by the number of buildings not yet built. Those

(Continued to page 164.)



If You are Responsible for the Selection of the Hardware

make sure that it is of the same grade as the other equipment of the house; do not use a poor quality of hardware in a good house.

Whether you build for yourself or for someone else, provide comfort and safety by the use of easy-working, secure locks and remember that a good design adds to the attractiveness of the building. It helps sell a house if it is trimmed with



SARGENT

REG. U. S. PAT. OFF.

HARDWARE AND LOCKS

—the most complete line offered to the American trade, well-known goods that may be purchased from representative hardware dealers everywhere. Sargent locks supply strength, security and easy-working mechanism; Sargent designs are tasteful and correct. The Sargent Book of Designs, sent free on request, will show the variety of patterns.

Mechanics say these Automatic-Set Bench Planes are best



They are standing the test of actual use on the work-bench and have proven to be superior tools. Intended for both heavy and very fine cuts and especially adapted for working against the grain on cross-grained hard wood.

The features are the automatic-set, a great time

saver; the rigidity, which insures good work; and the ease of adjustment.

These features are fully explained and the six sizes of these Planes described in the Sargent Plane Catalogue, a copy of which will be sent free on request.

SARGENT & COMPANY

51 Water Street

New Haven, Conn.

who have used Rex Strip Shingles report them to be a decided improvement over the individual type of shingle, which in itself was a marked improvement over former kinds of roof coverings.

This company has published an extremely interesting catalog which describes all its products, and also contains valuable information about all kinds of roof coverings. A copy will be sent to those who ask for it.



Lichty Folks Change Firm Name

Lichty Metal Products Co. is the new name for B. F. Lichty Sons Co., Sheet Metal Works, of Waterloo, Iowa, manufacturers of the well known "Monitor" line of cupolas, ventilators, skylights, etc.

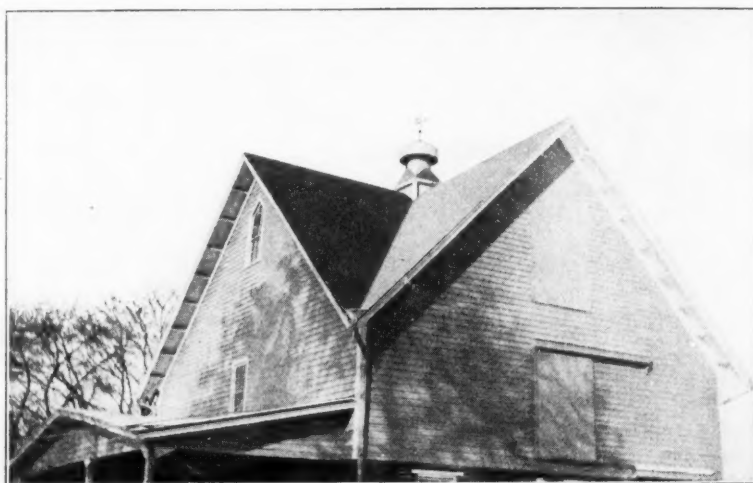
In these days efficiency is to be considered in the name as well as any department of a business.

This new name signifies the nature of the business of the company as well as the personality in as few words as possible.

Lichty Metal Products Co. are also making changes and improvements in their factory and especially in the shipping department, that they may be able to take care of the constant increase in their cupola orders. They are prepared to ship any of the regular cupolas listed in their catalog the same day they receive the order, and special orders will be shipped more promptly.

Freight service out of Waterloo is the very best, as all freight delivered to the transportation company leaves Waterloo before 8:00 o'clock A. M. the next day.

Their all steel "Monitor" Cupolas can be constructed to fit



The "Monitor" Cupola Can Be Constructed to Fit Any Type of Roof.

any type of roof as shown in the accompanying illustration.

The roof of this barn is out of the ordinary, as the pitch of the roof is different on two of the wings than on the other side.

The heights of the ridge and eaves are the same, but the widths of the wings being different make the rafters and pitch differ and the base of the cupola had to be constructed accordingly.

A drawing with measurements was sent with the order, and a special base was manufactured for this barn.

Lichty Metal Products Co. will be pleased to hear from anyone having special constructions or desiring information regarding ventilating problems.



From lumberjack to cabinetmaker

THE SIMONDS mark of quality is known and appreciated by all classes of saw users!

For 85 years we have been engaged in perfecting these wonderful tools and now Simonds Saws are manufactured of Simonds own steel in four excellently equipped factories and tempered by our own special process.

There is a Simonds saw for every purpose. The saw illustrated sells for \$3.00. Ask your dealer to show you the Simonds line and write today for our free book "The Carpenter's Guide."

Simonds Mfg. Co.

"The Saw Makers"
Established 1832

Fitchburg, Mass.



Germantown Master Builder TOOLS

*The tools with
the pedigree*

THE quality of the workmanship is largely dependant on the quality of the workman's tools.

Every carpenter and builder of experience knows this—knows that he cannot exercise too much care in the choosing of his hammers, hatchets, etc. As a consequence, tools bearing the brand of

**GERMANTOWN
MASTER BUILDER**

are the first choice of "the man who knows."

Made of the absolutely finest steel procurable, hand forged, and individually tempered and tested, Germantown Master Builder Tools carry a national prestige of fifty-eight years standing. Pick up a Master Builder at your dealer's, feel the perfect balance of it, notice the ideal hardness, the keen cutting edge, the octagon shaped, second growth hickory handles, the general perfection of design and manufacture—and then ask yourself if you can, in justice to your work, put up with an inferior grade.

**Broad
Hatchet,
\$1.50
to
\$2.00**

**Roofer's
Hatchet
with
Bit
Gauge,
\$2.00**

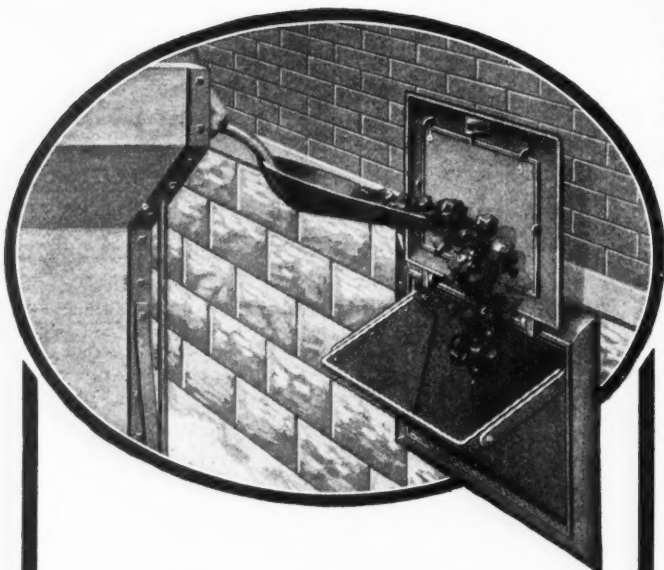
**The best
Hatchet
ever forged,
\$1.75**

*The samples shown
on this page com-
prise a few of our
most popular models
—see the complete
line at your dealer's
or write us for full
information.*

**The Hammer
with the
swing,
\$1.25**

**Germantown Tool Works
Philadelphia, Pa.**

Branch: 62 East Lake Street, Chicago



For That New Building!

Give it the appeal of completeness—give it the finishing touches which make it thoroughly up-to-date. Home builders realize the need of these modern necessities and value having them. Please your customers by including them in your plans.

Majestic Building Specialties

Nationally known because of their satisfaction-giving qualities.

Majestic Coal Chute catches all the coal. Serves as a window, too, giving splendid light to the basement. Locks from the inside and is absolutely burglar-proof. Can be put in an already built house or built into a new one.

Majestic Garbage Receiver is sanitary, emits no odors—keeps the contents safe from dogs and vermin. Placed deep in the ground, never unsightly. Can be conveniently opened by the foot. Always closed, watertight and fly-proof.

Other Majestic Specialties

The Majestic line is complete. Coal Chutes, Underground and Built-in Garbage Receivers, Milk and Package Receivers, Rubbish Burners, Duplex One-Register Store Heating Systems, Street and Park Refuse Cans, Metal Plant Boxes, Pipe and Pipeless Furnaces, Hose Reels, etc.

Completely Described in New Catalog
Mail Coupon for it



THE MAJESTIC CO.,
702 Erie Street,
Huntington, Indiana

Please send me printed matter, complete information, proposition and terms to carpenters and builders.

Name.....

Address.....

City..... State.....

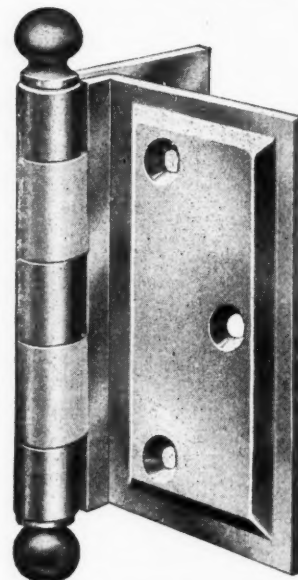
Stanley Wrought Steel Raised Panel Half Surface Butt

The accompanying illustration shows the new wrought steel raised panel half surface butt which the Stanley Works of New Britain, Conn., has just placed on the market.

The raised panel of this No. 162 butt matches the popular Colonial patterns in lock sets and escutcheons. Strong, simple, dignified, this design is in pleasing harmony with the best of modern taste in architecture and builders' hardware.

The lights and shadows on the surface of the panel give it the appearance of being finished in two different shades or tones. This is the same "two tone" effect which is produced on the latest builders' hardware. All the advantages gained by the use of other Stanley half surface butts apply to No. 162. With it a door is hung easily and quickly. The under tip is slotted so that the pin may be quickly reversed.

No. 162 is stocked in all the standard Stanley finishes and in the three best selling butt sizes: 3, 3½, and 4 inches. It is packed with oval head screws for the surface leaf; one pair in a Stanley box; 100 pairs in a case.

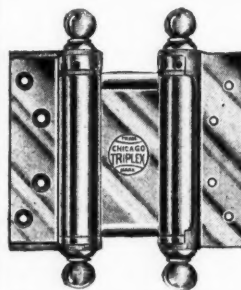


The New Stanley Raised Panel Half Surface Butt.

Evolution of Triplex Spring Hinge

In the primitive days it was customary to hang a door by fastening a piece of stiff leather from the door to the door casing, thereby providing a crude sort of hinge.

Later the idea developed of taking two pieces of metal and engaging them by means of a pin so that one piece would turn upon the other. This was really the origin of the hinge, which was more or less similar to the steel strap hinge which is in use today, and is applied to the surface of the door and door casing.



The Chicago "Triplex" Spring Hinge.

Thru the development of door and door casing construction it was found that in many cases it was preferable for the two flanges of the hinge to be mortised respectively into the edge of the door and door casing instead of upon the surface. The result was, that the hinge was modified so that the flanges were made of rectangular shape and narrow enough to be applied to the thinnest door.

Up to this time the hinges had no feature by which the door would be automatically closed. A hinge was finally constructed so that one of the flanges formed a barrel into which a coil spring was inserted.

In many cases it was found desirable to fit doors with a double-action spring hinge which would allow the door to be opened in either direction from the closed position. In attaining this result, another leaf was joined to one of the leaves, thereby forming a hinge with two spring barrels and

(Continued to page 168.)

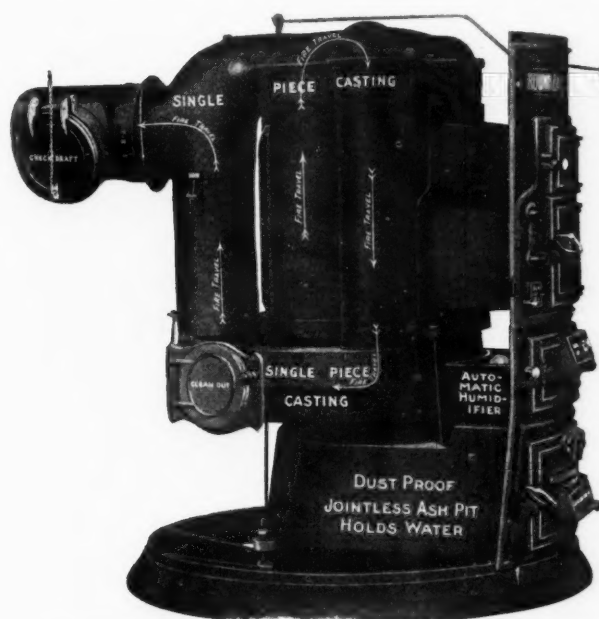
A Home Heating Plant That Safeguards Health

WHEREVER Round Oak Moistair Heating Systems are used, there you'll hear only words of highest praise.

The *reasons why* are logical—most of them exclusive.

More than 60,000 of these *more healthful* home-heating plants sold to date, and not one of them because the price was *less*.

First, satisfy *yourself!* Then for Health, Comfort, Economy, ease of operation and permanent satisfaction, recommend and specify the



ROUND OAK Moistair Heating System

The Only Heating System That Automatically Ventilates and HUMIDIFIES

Floods the home with a constant stream of pure warm, fresh MOIST AIR.

Most economical in fuel requirements—burns all fuels. Dependable in all weather.

And the most *durable* heating system on the market.

A heating plant with a background of 46 years of manufacturing experience devoted to the perfecting of this one system.

Built by the makers of the famous Genuine Round Oak Stove.

Nationally Advertised

Sold through leading dealers everywhere—supported by a co-operative local selling plan that architects, builders and dealers should investigate.

COMPREHENSIVE FREE BOOK ON REQUEST

Fully describes the Round Oak Moistair Heating System. An interesting book worth studying. Write for your copy NOW.

THE BECKWITH COMPANY

Round Oak Folks

66, FRONT STREET

Established 1871

DOWAGIAC, MICH.

Five Star Points of Round Oak Supremacy

- * **Health** Only Heating System that automatically ventilates and HUMIDIFIES.
- * **Comfort** Delivers pure, warm, ever-changing moist air, free from dust, gas, smoke—fitted with gas-tight doors and dampers.
- * **Economy** Longest fire travel all inside casing; improved hot blast Ring; extra deep fire pot; extra large combustion chamber affords perfect combustion; most heat on minimum of fuel.
- * **Convenience** Simple regulator controls entire system. Self-cleaning. Ash pit dust-proof—seamless; fitted with sprinkler. Non-leak door frames cast on—not bolted. Easy to operate.
- * **Durability** Materials used stand highest physical tests. All hinge pieces drilled, not cast. Never a bolt, where a rivet will do! Tight fittings guaranteed. Good for generation of service.



EXECUTIVES AND TRAVELING SALESMEN MILWAUKEE CORRUGATING COMPANY.

Lower Row (Left to Right): P. E. Sauerwein, J. H. Christman, R. I. Schuppener, Fred E. Eriksen, J. E. Tracy, Louis Kuehn, President; A. J. Luedke, Secretary; T. A. Lockwood, A. M. Smith, F. D. Naylor, F. W. Rockafellow.

Middle Row: Edson Perry, M. E. Cutner, E. F. Gerken, A. C. Scheder, C. Willmen, K. I. Pottenger, H. H. Siefert, S. D. Burton.
Top Row: T. J. Evans, C. F. Nason, J. M. Smith, T. W. Jolivet, E. L. McVicker, C. W. Kuhl, J. H. Riddle, R. S. Schmelder, J. H. McVay, C. C. Banholzer.

three leaves. This is the evolution of the "Triplex" spring hinge manufactured by the Chicago Spring Butt Company.

The equipment manufactured by this company includes a large line of door fittings, information in regard to which will be sent to anyone interested.



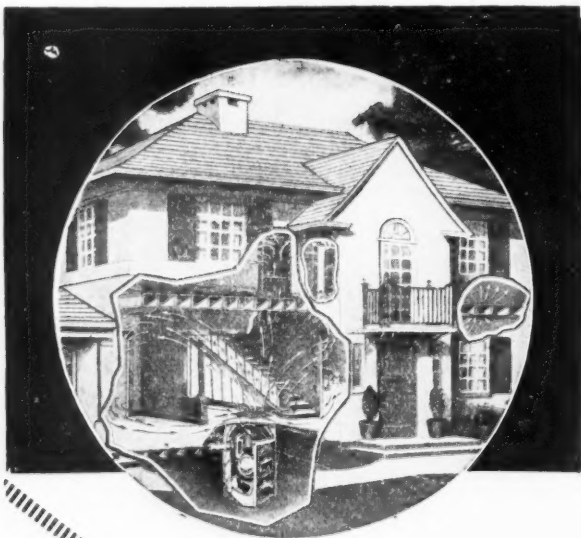
Corrugated Men in Sales Meet

The Annual Salesmen's Convention of the Milwaukee Corrugating Company, held at the plant Jan. 2, 3, 4, 5 and 6, was undoubtedly one of the best salesmen's conventions in the

history of the company. The spirit of enthusiasm shown and the desire expressed for intensive co-operation, and the interest shown in the new items manufactured this year all added to make this convention one of the best on record.

The usual evening banquet was held at the Deutscher Club. This was strictly a good-fellowship meeting of the executives and the salesmen.

An interesting point to note is that each convention finds an appreciable growth. The salesmen, returning to their respective territories, left with a feeling and desire to give even better service to their customers than in the past.



AB-317

Standard School
Heater Co.,
Chicago, Illinois.

Send me full information.

Name _____

City _____

State _____

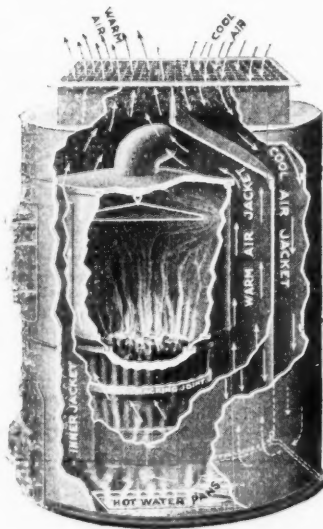
Territory open to responsible men.
One System installed sells many more.

*Our System is guaranteed. Bonded
satisfaction to every user.*

**Standard School
Heater Co.**
Chicago, Illinois

ONE REGISTER CLEAN-AIR SYSTEM

*The "One"
System that
Does
the Work*





Cut Hauling Cost 74%

LUMBER companies and building supply houses everywhere are actually saving up to 74% in delivery cost with Smith Form-a-Truck. And their wonderful speed under all conditions—12 to 15 miles per hour—means 300% increased efficiency.

Install a Smith Form-a-Truck. Then multiply your territory by three. Multiply your profits by three.

This Smith-Form-a-Truck speed means that you can make quicker trips—more trips—haul heavier loads—keep your drivers and loaders busy all the time—and still save up to 74%.

Does 4 Times the Work

A Smith Form-a-Truck does the work of four teams—at half the price. Yet it costs no more than one good team and a harness—\$350.

Look at these remarkable Smith Form-a-Truck economies. Less than 8¢ per ton mile, exclusive of driver's wages. 6,000 to 8,000 miles per set of tires. 12 to 18 miles per gallon of gasoline. 12 to 15 miles per hour. Repair expense is practically nothing.

Save Horse Cost

Horses cost money every day whether they work or not. Stabling, feed, veterinary bills and care is money-waste. And con-

stant, heavy work shortens their usefulness.

Smith Form-a-Trucks cost you not one cent when not working. When the engine stops, operating cost stops. Every ounce they haul is profit to you.

Install Smith Form-a-Trucks. Reduce expensive horse-drawn equipment. Save on first cost—save on upkeep—save on insurance—save on depreciation.

Double Construction

A Ford, Maxwell, Dodge Bros., Chevrolet, Buick or Overland chassis, combined with the Smith Form-a-Truck attachment, makes a guaranteed one-ton truck. 90% of the load is carried by the big Smith Form-a-Truck rear axle. The Ford axle is merely the jackshaft. The Smith Form-a-Truck regular frame telescopes the motor car frame, making double reinforcement.

Get the Proof

Write NOW! let our transportation engineers solve your transportation problems. They know the hauling problems of lumber companies and supply houses. Learn exactly what Smith Form-a-Truck will do for you.

Smith Form-a-Truck

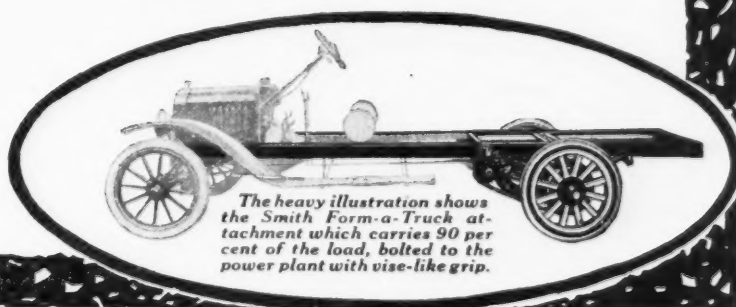
\$350

F. O. B. Chicago

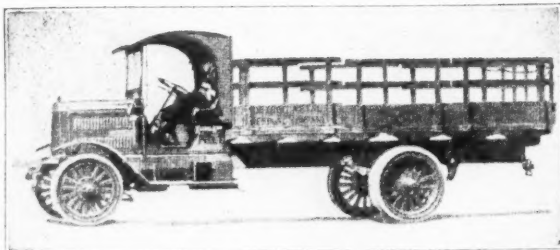
Smith Motor Truck Corporation

Manufacturers of Smith Form-a-Trucks

Executive Offices and Salesroom, Suite 998 Smith Form-a-Truck Bldg.
1470 MICHIGAN AVE., CHICAGO



The heavy illustration shows the Smith Form-a-Truck attachment which carries 90 per cent of the load, bolted to the power plant with vise-like grip.



THE fact that prominent carpenters, builders and contractors are daily investing in Kissel-Kar Trucks is *cash-evidence* of Kissel's Supremacy in truck designing and construction.

Our ability to build Kissel-Kar Trucks so they will efficiently and economically solve every haulage and transportation requirement in the building trades is the logical result of ten successful years in building trucks.

The many Kissel structural innovations and superiorities that insure low operating expense, durability and dependability are designed to overcome the obstacles your haulage department is now contending with.

A postal will bring practical data on Kissel-Kar Truck performance in the service of other builders, carpenters and contractors. Send for it today or see your nearest Kissel-Kar dealer.

Kissel Motor Car Company

Hartford, Wis., U. S. A.

The matchless Kissel-built motor, and perfect worm drive rear axle are guaranteed with every Kissel-Kar Truck.

Kissel-Kar Truck branches, display rooms and service stations in all principal cities and towns.

Six sizes--from 1500 lb. Delivery up. Chassis prices \$950 to \$3350.

KISSEL-KAR TRUCKS

"Modern Way" Pipeless Furnace

Since the pipeless furnace has established itself as a heating unit capable of performing what it is intended to do successfully, there is a feature which builders should be very much interested in. This type of furnace may be installed by any builder without extensive experience and the business of selling and installing such furnaces is therefore a possible means of adding to his income. This business may be conducted as a part of the new building work and also in connection with remodeling and repairing.


A furnace of the "pipeless" type is made by the Modern Way Furnace Company of Fort Wayne, Indiana. The details of construction are interesting and the installation is very simple, any contractor or builder being qualified to install one of these furnaces without previous experience. The base of the furnace is made of one piece of cast iron, the ash pit being enclosed tightly so that no dust can escape. A special grate construction is used which greatly facilitates keeping the fire clean. The firepot may be had in either one or two piece construction. A large combustion dome tends to promote complete combustion of the fuel, thus saving money and eliminating soot. The inner shell is built up of two sheets so joined together that a dead air space is furnished which keeps the heat from passing out into the air of the cellar. The heat loss is prevented principally by passing the cold air down the outside passage, as is shown in the illustration, which will catch any heat which tends to leak out. A considerable saving in fuel is possible by cutting down the heat loss around the furnace.

These furnaces are liberally guaranteed by the manufacturers and many satisfactory installations have been made. Several important details of construction have not been mentioned here, but those who are interested in considering the advantages of the "pipeless" furnace will find The Modern Way Furnace Company well equipped with complete data which may be had for the asking.



The Pipeless Furnace Offered by the Modern Way Furnace Co.

(Trade Notes Department Continued to page 174.)



*from Office
to Lumberyard
---to the Job,*

Often times a long way around,
and you may have to travel the
same route many times a day.
You can make the trip quickly
and cheaply in the

New Case "40"--\$1190

Justly called the "100,000-Mile Car"

One generation after another has found in the name CASE a standard of good workmanship and efficient service. You who particularly need a *faithful* car will find in the CASE a wonder for your use---comfort, power, endurance, speed---in abundance.

When it comes to a long, *hard* pull, or to a *steep* climb, you will realize just how faithful this car is. And then after you have owned it a *long* time, and have driven it 100,000 miles, you will appreciate the CASE standards of construction.

Consider what you want a car for and what you want it to do. Then write in for our illustrated description, and see if the CASE does not fill the bill in every particular. We can tell you of other Contractors' experiences at the same time.



The Sign of
Mechanical
Excellence
the World Over

J. I. Case T. M. Company, Inc.

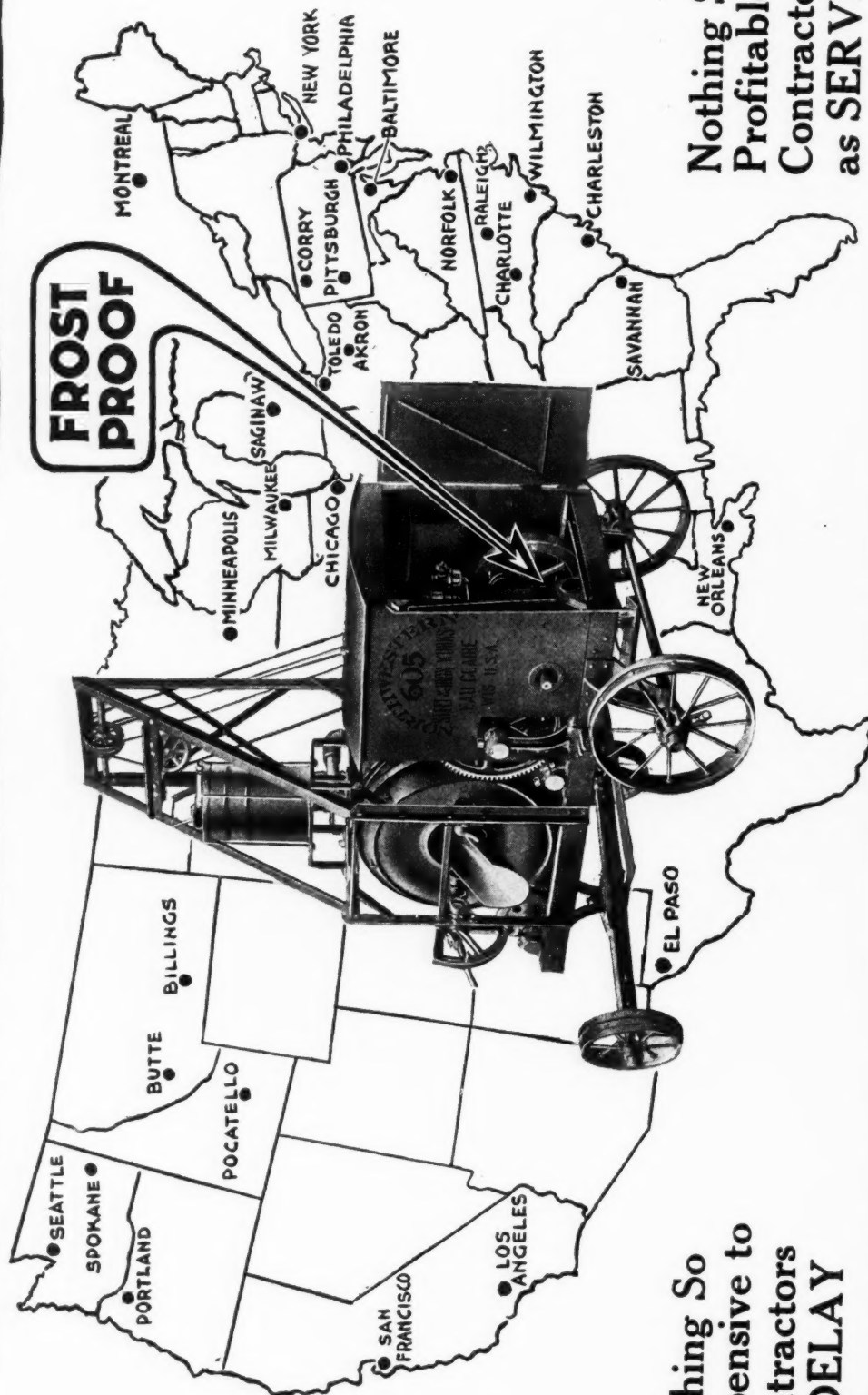
719 Liberty Street

Racine, Wisconsin



The Sign of
Mechanical
Excellence
the World Over

"NORTHWESTERN"



Nothing So
Expensive to
Contractors
as DELAY

Nothing So
Profitable to
Contractors
as SERVICE

DISTRIBUTION

GIVES IMMEDIATE DELIVERY

List of Distributors—Machines Ready for Shipment

- | | | | |
|---|--|---|--|
| Akron, Ohio
W. E. Wright Co.,
935 E. Market St. | Kansas City, Mo.
Builders Material Supply Co.,
Republic Bldg. | Minneapolis, Minn.
Minneapolis Equipment Co.,
801 Plymouth Bldg. | Philadelphia, Pa.
Frank Toomey, Inc.,
127-131 N. Third St. |
| Baltimore, Md.
Annen Machinery Co.,
107 E. Lombard St. | Knoxville, Tenn.
R. L. Harris,
Holston Bank Bldg. | Montreal, Canada
Watson Jack & Co., Ltd.,
Power Bldg. | Pittsburgh, Pa.
Somers, Miller & Todd Co.,
323-325-327 Water St. |
| Billings, Mont.
G. M. Fletcher & Co.,
Carolina Portland Cement Co.,
Avenue A at Sixteenth St. | Leavenworth, Kan.
The Missouri Valley Bridge & Iron Co. | New Orleans, La.
Woodward, Wight & Co., Ltd. | Pocatello, Idaho
Pocatello Engineering & Machinery Co.,
129 S. Main St. |
| Butte, Mont.
W. J. Walsh,
1345 Harrison St. | Lincoln, Neb.
National Supply Co.,
105-6 Bankers Life Bldg. | New York City
Northwestern Steel & Iron Works,
Export Dept.,
2635 Grand Central Terminal. | Portland, Ore.
Henry A. Conner,
26 N. Front St. |
| Buffalo, N. Y.
Hendee-Corner Co.,
60 Pearl St. | Los Angeles, Cal.
Herrington Co.,
417-449 E. 3rd St. | Norfolk, Va.
G. S. Fichus,
302 Monticello Arcade. | Raleigh, N. C.
William Walker Jones,
510 Tucker Bldg. |
| Charleston, S. C.
Carolina Portland Cement Co. | Matteson, Ill.
Bressee Mfg. Co. | Omaha, Neb.
The G. H. Alwine Co.,
412 Ware Block. | Richmond
(See Norfolk, Va.) |
| Charlotte, N. C.
Charlotte Supply Co. | Memphis, Tenn.
Pidgeon-Thomas Iron Co. | Peoria, Ill.
Peoria Fuel Co. | Saginaw, Mich.
Sullivan Supply Co.,
Corner Genesee and Water. |
| Chicago, Ill.
H. F. & H. B. Hayden,
20 E. Jackson Blvd. | Milwaukee, Wis.
H. F. & H. B. Hayden,
433 Fortieth St. | | St. Louis, Mo.
K. S. Axater Co.,
1506 Chemical Bldg. |
| Cincinnati, Ohio
The J. M. Wikel Engineering Co.,
629 Union Trust Bldg. | | | San Antonio, Texas
San Antonio Machine & Supply Co. |
| Corry, Pa.
Corry Bridge & Supply Co.,
Pierre L. Russell, Inc. | | | San Francisco, Cal.
Continental Steel & Supply Co.,
527 Howard St. |
| Dallas, Texas
Pierre L. Russell, Inc. | | | Savannah, Ga.
Savannah Supply Co. |
| Des Moines, Iowa
Globe Machinery & Supply Co. | | | Seattle, Wash.
Polson Implement Co. |
| El Paso, Texas
Sheehan-Hackley & Co.,
P. O. Box 967. | | | Somerville, Mass.
Steel Products Co.,
Massachusetts,
438 Broadway. |
| Evansville, Ind.
Indiana Builders Supply Co. | | | Spokane, Wash.
General Machinery Co.,
First and Stevens. |
| Ft. Wayne, Ind.
Ft. Wayne Builders Supply Co.,
812-840 Hayden St. | | | Springfield, Ohio
T. J. Lane,
241 Bushnell Bldg. |
| Indianapolis, Ind.
Van Camp Hardware Co. | | | Toledo, Ohio
Moriarty Bros.,
216-224 Ottawa St. (Oliver Bldg.). |
| Joplin, Mo.
McNeal Machinery Co. | | | Wilmington, N. C.
Hyman Supply Co. |

THE NON-SLOP "NORTHWESTERN" has had wonderful sale because giving wonderful value. Quick mixing action. Won't stop with regular charge. Trouble-proof, fool-proof, frost-proof, and no delay. **MORE POWER** than other mixers of same capacity.

NATION-WIDE DISTRIBUTION shown here places "NORTHWESTERN" MIXERS ready for delivery on shortest notice **AT YOUR SERVICE.**

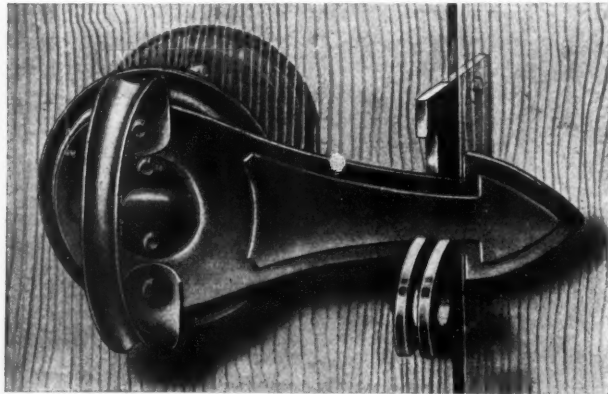
Write to **FACTORY** for Bulletin No. 4, or ask one of our **DISTRIBUTORS** because

Our Prices Are Lowest
Our Service is Best

NORTHWESTERN STEEL & IRON WORKS Capital Stock \$200,000.00
"The House of Good Service" **EAU CLAIRE, WIS.**

Protection Against Thieves and Prowlers

Safeguard the building against all intrusion and win the lasting confidence and good-will of your client. The owner of barn, garage, granary or warehouse expects protection, not only from the weather, but protection against thieves and prowlers as well, and the McKinney door latch affords that protection. Doors equipped with this new wrought steel



All Screw Heads Are Covered in This McKinney Latch.

latch and a dependable padlock are impassable. And the latch can't be taken off or tampered with in any way because all screws are concealed when door is closed.

This latch is made in only one size and consists of but four simple parts, yet it can be used on either right or left-hand sliding or swinging doors and is easily adjustable to doors from 1 3/4 to 2 3/4 inches thick.

All parts of the McKinney door latch No. 1920 are first electro-galvanized and then japanned. It is easy to attach, has no springs to break or wear out, and is easily operated

from either side of the door.

Ask your dealer to show you this new door latch—use it on your next garage or farm building and protect your client. Write the McKinney Manufacturing Company, Pittsburgh, Pa., for their Builders' Catalog A-11.



The Round Oak Moistair Heating System

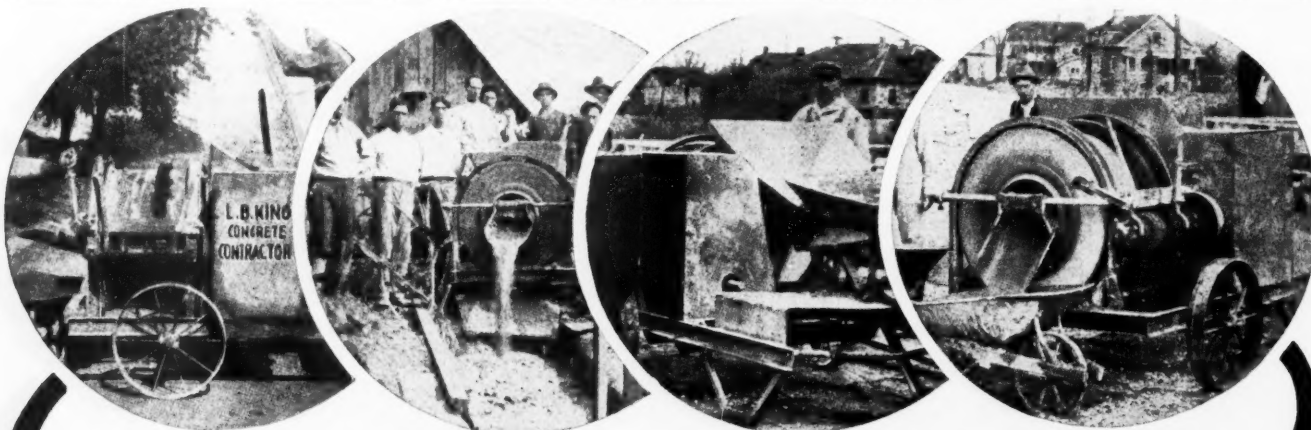
An unusual amount of interest is now centering around the Round Oak Moistair Heating System, a product of the Beckwith Company, Round Oak Folks, Dowagiac, Mich., which is now being extensively advertised in leading periodicals.

Architects, builders, contractors and especially local stove and furnace men are now looking with greater favor than ever upon this long accepted, but for the first time extensively advertised, product. This is due not only to the prestige always acquired thru association with any high-grade product, but also to the unique appeal in the advertising which is sure to stir up a popular interest.

Health as well as economy and ease of operation form the key note of the Round Oak Moistair advertising. In this advertising it is brought out quite forcibly that properly humidified air is fully as essential to health as is fresh air, and that the Round Oak Moistair Heating System, due to its automatic humidifier, supplies the necessary humidity. This plus quality of construction is the basis of the campaign.

The Round Oak Folks are getting behind their national advertising with an unusually effective form of local sales co-operation. This serves to hook up the local dealer and the prospect, and will prove equally helpful to builders and architects back of whose recommendations will now go the weight of this widespread publicity.

Full particulars of this selling campaign both local and national may be obtained from the manufacturers.



Always on the Job--

"Little-Devil" Mixer

A Bigger, Better Mixer for the Same Money

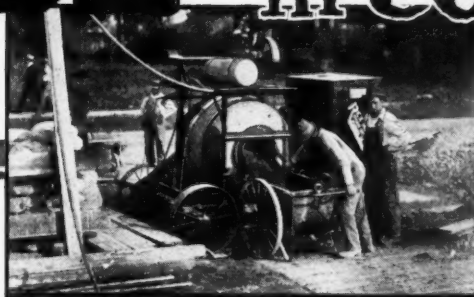
Capacity 7 cubic feet of loose material. Low Charging—End Discharge—May be used for Paving, Grouting Brick Pavements, Foundations, Sidewalks and will mix and place concrete quicker and at less labor cost than any mixer on the market. Write today for catalogue, prices and terms.

Chicago Builders' Specialties Co.

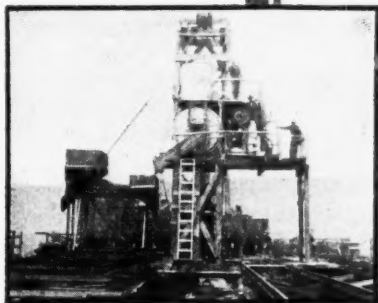
1461 Lumber Exchange Building, 9 South LaSalle Street, Chicago, Ill.

REX MIXER

For PERMANENCE
in CONCRETE



The Rex No. 7-S at work on Ford Assembling Plant, Milwaukee.



One yard Rex Mixer owned by Whitney Bros. Stack Co. of Duluth, Minnesota, at work on Duluth's gigantic ore docks.

The Proof of Rex Performance Is in Jobs Like These

Here are pictures that show how Rex Mixers conform to conditions as they find them. High up in the air, on the surface, deep in the ground, the difficulty of the job makes no difference—it's all in the day's work.

Smooth, steady delivery of power is guaranteed in every Rex Mixer—guaranteed, because every model is equipped with Rex Chain Drive and Rex Chain Transmission, the most reliable of any used on concrete mixers. Gasoline-driven Rex Mixers are equipped with Novo Engines—a guarantee of power behind the drive.

The complete Rex line offers you an unequalled field from which to pick your mixer equipment. You will find this shown in the Rex Catalog No. 71-D.

Let us send it to you.

Chain Belt Company

Established 1891

730 Park St., Milwaukee, Wis.

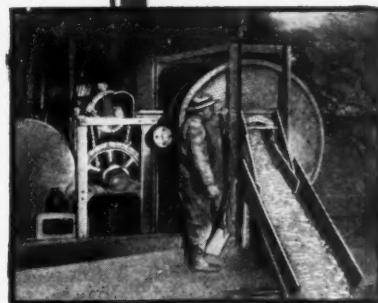
Chain Belt Company, 30 Church Street, New York City
W. B. Louer Co., Old Colony Building, Chicago

Makers of

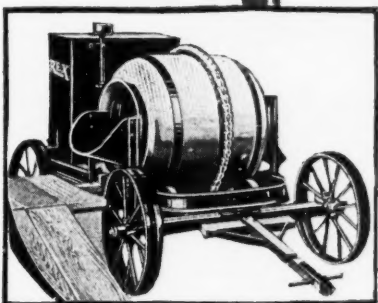
Rex Chains for elevating, conveying
and transmission
Sprocket Wheels—Gears
Shaft Couplings and Collars

Malleable Elevator Buckets
Rex Paving Mixers
Rex Concrete Mixers
Travelling Water Screens

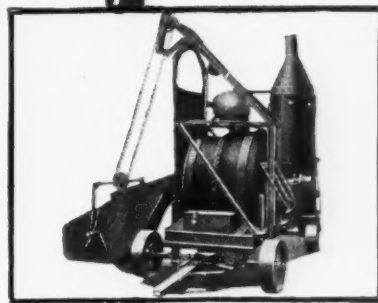
Write for interesting booklet on any of these



The Rex No. 23-S. Cap. 1 cu. yd. Ten of these were used on Manhattan end of Catskill Aqueduct. A Rex No. 28-S owned by Smith, Hauser & Locher has a record of 30,000 cubic yards of concrete without a breakdown and without costing one cent for repairs.

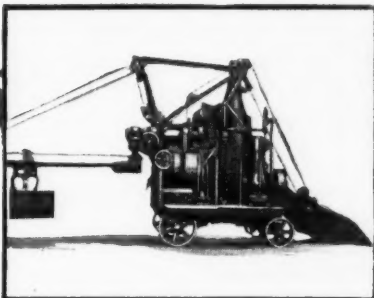


The Rex No. 4-S. Cap. 4 cu. ft. wet mix. Equipped with 3 H. P. Novo Gas Engine. Geo. A. Fuller Co. operated 13 Rex No. 4-S mixers on the new Curtis Bay Chemical Plant, Baltimore, Md.



Rex No. 14-S. Cap. 14 cu. ft. wet mix. Power Plant—9 H. P. Steam Engine and 10 H. P. Boiler, 10 H. P. Novo Gas Engine or 10 H. P. Electric Motor.

Rex Paver No. 9-E. Cap. 9 cu. ft. wet mix. Power Plant—8 H. P. Steam Engine and 10 H. P. Boiler; 10 H. P. Novo Gas Engine; 7½ H. P. Electric Motor.



If desired, 11-ft. distributing spout having three points of discharge will be furnished on Rex Paver No. 9-E instead of boom and bucket.



Burns Cheaper Grades of Coal!

Cuts Coal Cost 1/2 to 2/3 Guaranteed!

Nineteen-seventeen will be a Williamson UNDERFEED year.

With coal selling almost "by the karat" and the general high cost of living going still higher, people simply have got to trim expense.

With the Williamson UNDERFEED their saving begins at the coal pile—1/2 to 2/3 saving, that's the Williamson guarantee—and as an architect or contractor that guarantee means something to you to pass along to prospective customers.

Another big talking point are the 45,000 users who are saving money and having warmer, more healthful homes by means of this same Williamson UNDERFEED efficiency.

WILLIAMSON UNDERFEED Furnaces and Boilers

Cut Coal Bills 1/2 to 2/3 Guaranteed

Ask us to send you full particulars regarding heating plans which we prepare without charge for you and your customers. Also regarding our help in selling and installing.

Also let us send you interesting book which pictures and describes the scientific principle of the Williamson UNDERFEED and its clean, effective, economical operation.

Simply Send the Coupon---NOW!

The Williamson Heater Co.
317 Fifth Avenue - Cincinnati, Ohio

THE WILLIAMSON HEATER CO.
317 Fifth Avenue, Cincinnati, Ohio

I would like to know how to cut client's coal bills from 1/2 to 2/3 with a Williamson New-Feed UNDERFEED.

Warm Air..... Steam or Hot Water.....
(Mark an x after System interested in)

Name.....

Address.....

My Heating Contractor's Name is.....

* My Business is.....

Interesting Wood Board Booklet

An interesting booklet is being distributed by the Cornell Wood Products Company, 173 W. Jackson Bld., Chicago, Ill. This booklet bears the title, "Building Better," and is intended to present useful facts regarding the manufacture and application of Cornell-Wood-Board to walls, ceilings and partitions. A brief history of the Cornell-Wood-Board industry is an interesting feature. The essential processes in the manufacture of this wall board are given from the tree to the finished product.

In the center of the booklet there is bound in seven interior views, in colors, showing the beautiful effects which may be obtained by the use of the material. This section is headed "Upstairs and Down," suggesting the broad application which Cornell-Wood-Board has in house construction.

The method of applying this wall board is described and illustrated. The board is applied directly to the studs in the new building, headers being set between studs where the cross-joints come. In old buildings the board may be applied directly over the old plaster. It is also useful in repair work and an innumerable array of small jobs. Some of these possibilities are suggested in the booklet.

On the last page of the booklet, the Department of Design and Decoration of the Cornell Wood Products Company is explained. The purpose of this department is to aid dealers in serving their customers. Thru any dealer handling Cornell-Wood-Board the builder may obtain complete plans of installation including color schemes for final decorations, if he desires it.

This booklet is ready for distribution among those who wish to know more about Cornell-Wood-Board.

Forbes Radiating Manifold Furnace

The Forbes furnace, manufactured by the Tubular Heating and Ventilating Company, 239 Quarry St., Philadelphia, Pa., by means of radiating manifold, removes and utilizes all heat in the escaping gases except that which is needed to create a good draft. The result is greater heating capacity in a smaller unit and more heat thru the house for an equal expenditure for fuel than could be obtained without the use of this manifold.

Air is taken in either from the outside or from the inside of the building thru a cold air box near the base of the furnace at the rear, part is passed across the radiating manifold and part is deflected around the firepot by a baffle plate and all air rises thru the space around the combustion chamber to the head of the furnace and thence to the various rooms. Each flue of the radiating manifold has horizontal fins cast integral with it. The radiating surface thus provided, added to that of the fire pot, dome and smoke neck, brings the total radiating surface up to a high figure.

Fuel is fed thru the fire door into the deep fire pot. Combustion takes place in the fire pot and dome and the hot gases pass thru the smoke neck into the manifold, where they are broken up into separate parts in the manifold flues. Most of the heat is lost in passing thru these flues, so that the smoke pipe leading from the furnace is always cool. In starting a new fire or when quick response is desired, a direct draft is used, controlled by a revolving damper, by which the gases pass directly into the smoke pipe from the top of the manifold without passing thru the flues.

From a structural consideration the Forbes furnaces have one feature which is of particular interest to builders. The overall height of the largest heater is only 54 inches. That of the smallest is 45 inches. This makes it possible to install the Forbes furnaces in basements where headroom is limited. In addition to this, the ease of installation is a desirable feature. The furnace can be set on the floor, as no founda-

(Continued to page 178.)

Make \$1,500 to \$3,000 This Winter

Work Right in Your Own
County---All or Spare Time

Profits Start First Day---Success Assured

Wonderful new business—a golden opportunity for one good hustler in every county. **No experience required.** No risk. Samples furnished—just follow easy instructions and work honestly—for yourself. If you want a high class position—if you want to make the winter months count—if you want **\$1,500 to \$3,000 cash** for five months, **write today.**

Amazing New Home Invention

The Shafer Ventilated Chemical Indoor Closet

No plumbing—no waterworks or cesspool. **Banishes the outdoor privy.** Revolutionizes living conditions in country and village homes. Solves the one humiliating and perplexing country home problem. An imperative necessity to health, comfort and convenience. Perfected by heating and ventilating engineer. **Tested in 2,000 homes for three years.** Gives positive satisfaction. **Demanded everywhere.** A sale at every home. **Thirty days' free trial guarantee.** Low priced—warranted for ten years. Illustrated book free, showing pictures of homes and rooms containing this wonderful device, complete description, letters of endorsement from health authorities, doctors, editors, and scores of users with full names and addresses. This book is free—send for it today—**investigate!**

\$112.00 in Eight Hours

That's the record of one man in a single day. **The same man has never sold less than five closets for any half day's work.** Every home a prospect. Every sale makes **dollars**—not pennies—of profit. Biggest money-making opportunity ever offered. Liberal commission. Permanent business. **Exclusive agency contract.** Territory free. Co-operation, advertising, assistance. Business supplies the capital.

Agents Outfit FREE

Send no money. No order required to start. We start you **FREE.** We teach you how to make amazing success. Write now. Secure your county under exclusive contract. **Don't delay.** Write a letter or card giving name of your county and mail it today. Risk a stamp to get complete free information. **Do it right now on your part.**

The Shafer Mfg. Co.
459 Colton Bldg., Toledo, Ohio



Chemicals, which are furnished with the closet, and air currents do the work, automatically.

Price Complete Only \$15

tions are necessary. No feet are required, since all cold air enters from the back. The smoke pipe, dampers and other such attachments may be placed on either side of the furnace.

The Tubular Heating and Ventilating Company outline heating systems from your rough sketches showing plans and dimensions of the buildings to be heated. Mail a card to them at 239 Quarry St., Philadelphia, Pa., and ask for complete information in regard to the Forbes furnace.

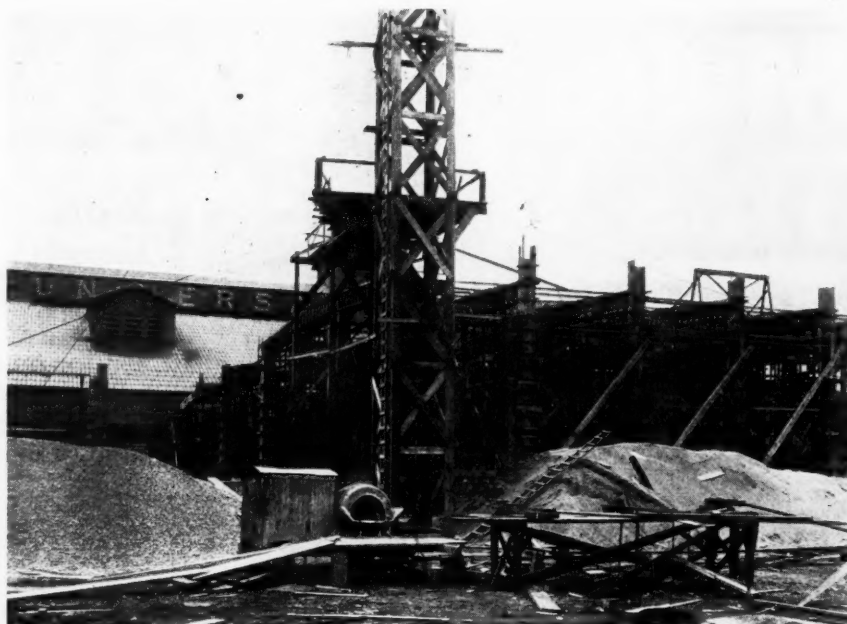


Attractive Structural Walls Obtained by Unique Methods of Concrete Block Making

The Universal Portland Cement Co. is erecting at their cement mills at Buffington, Indiana, a new sack handling building which presents features of interest both in construction methods and the pleasing effect attained in the exterior walls by the use of concrete blocks of a rough surface texture.

The building is 44 feet long by 80 feet wide and is one and two stories in height, two sections designed for sack renovating being two stories high while at one end of the structure the side walls are carried very high to provide large space for sack storage. The general contract for this work is handled by Nash-Dowdle Co., 29 South La Salle Street, Chicago.

The entire framework of the building is composed of rein-



Showing Work in Progress on Sack Handling Building of Universal Portland Cement Company at Buffington, Indiana.

forced concrete, consisting of columns, girders and purlins. The small purlins were pre-cast on the ground and then put in place between the forms for the girders and concreted in. This made possible obtaining a much smaller and more slightly purlin than if made in the usual way.

The accompanying illustrations show the formwork for a large part of the superstructure. The concrete both for the

(Continued to page 180.)

HERO PIPELESS FURNACE

LESS WORK AND MORE MONEY

THERE is less work because you have one register instead of six or seven to install. You make more money because the furnace costs you less; it costs you less to install it and you have a satisfied client. He is always the best money-maker you have.

YOU Can Install the Hero

Why divide your profits with another? You can do all installation work. It is **your** job. Get the habit of installing "Hero" furnaces. It makes satisfied customers, brings you more heating contracts and is profitable.

There is a HERO for Every Job

No two heating jobs are alike. We are heating experts and our knowledge is yours. Send us your floor plans and we will send you a complete blueprint showing proper heating plant and best installation method. This work is done absolutely **free** and entails no obligation on your part.

Big Commissions to Contractors

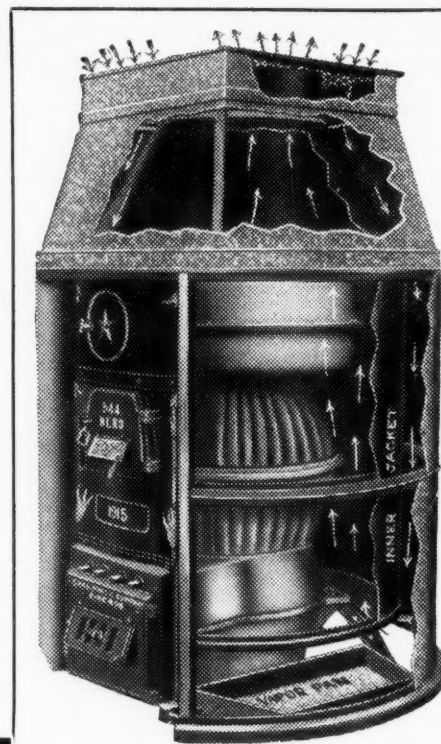
We want **YOU** to represent us in your locality. We will give you exclusive territory and enough of it to make it profitable to handle. "Hero" furnaces have been manufactured for the past twenty-five years and their quality is recognized. They will add to your prestige as an up-to-the-minute builder. Ask us about our special method for heating that detached room.

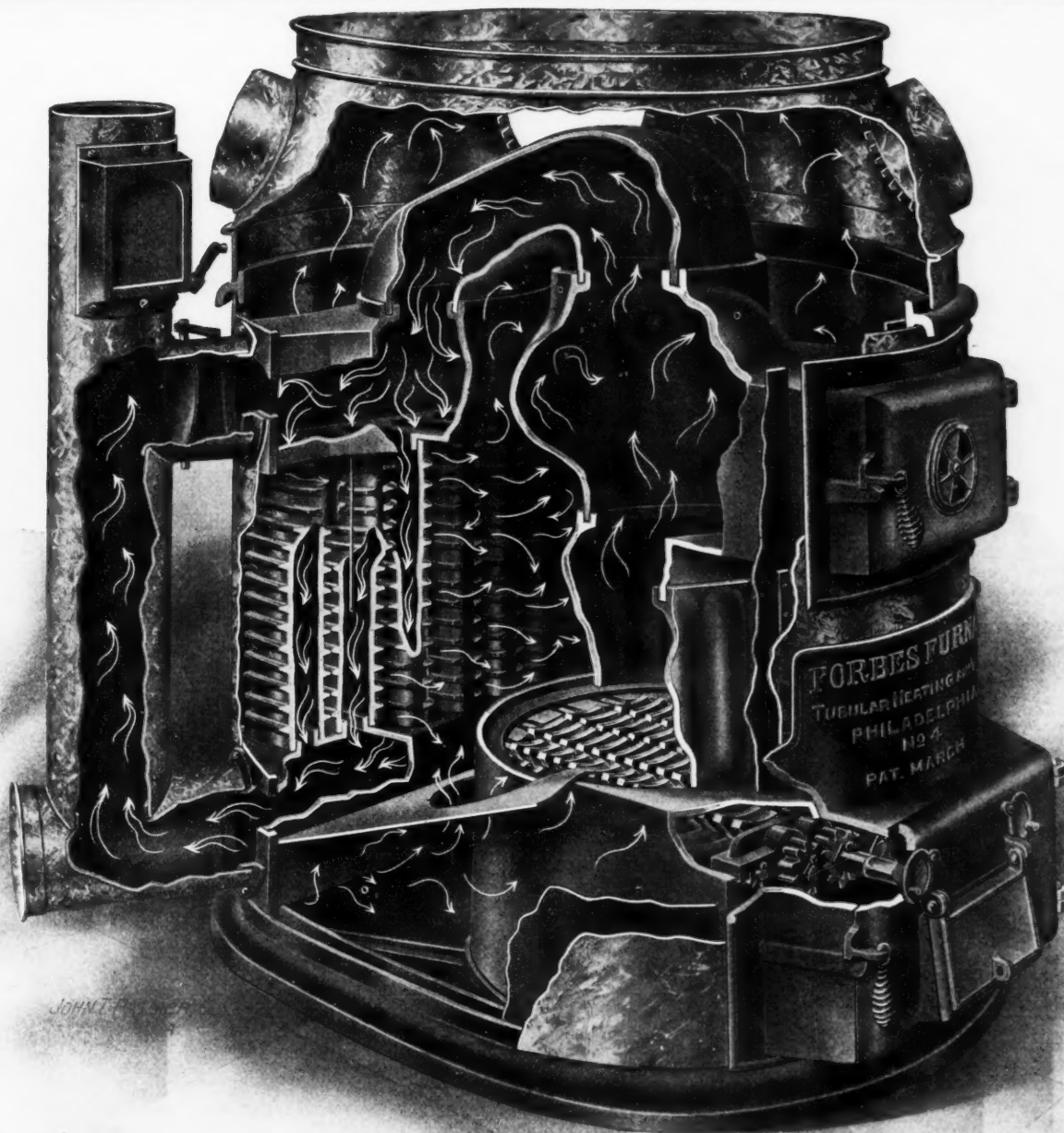
Write Today for Catalog No. 1

CHARLES SMITH COMPANY

57 West Lake Street

Chicago, Illinois





FORBES FURNACE

With the Radiating Manifold

which extracts and retains all the heat (that usually goes up the chimney from other heater) and forces this heated air through the house, leaving only sufficient heat in the smoke and gas to create a good draft.

Twenty-Two Years' Experience Is at Your Service

NOTE THE DIRECTION OF COLD AND WARM AIR. Notice the long fire travel, the simplicity of construction, etc. The FORBES is only 4 feet 3 inches high, a feature to be considered when installing furnaces in low cellars. The entire radiating surface of the fire-pot, dome, smoke neck and manifold is greater than that of any other heater on the market.

Send a Rough Sketch of Building

and we will outline a heating system to meet your requirements and estimate on costs.

Our catalogue will convince you of the superior merit of the FORBES WARM AIR GENERATOR.

Let us figure on your next installation

TUBULAR HEATING & VENTILATING CO.

239 Quarry Street, Philadelphia, Pa.

Jahant Pipeless Furnace



COMBINED with the best heating principle known is the pipeless feature. The Jahant Down Draft Furnace uses all the heat units in the coal and saves its original cost in a few months.

Save \$20 to \$50 on Coal Bill

A Jahant will save $\frac{1}{3}$ to $\frac{1}{2}$ on coal bills according to size of house. Remember the Jahant burns air and saves the coal. We have been selling Jahants for 35 years and have never had one returned.

Get Our Engineers' Help FREE

Our Engineers will figure out your heating problems, will make drawings and plans for every Jahant Job and give advice as to whether the pipe or pipeless Jahant is best—this service is absolutely FREE.

Contractors' and Builders' Proposition

Jahants are sold on easy payments—we pay the freight. They are easily and quickly installed—each Jahant is cut to fit—blue prints with each job. 360 Day Legal Guarantee Bond. Get our Contractors' and Builders' Special Proposition. It's a money maker—it adds profit to every house built. Write now for Catalog—literature and proposition all FREE.

JAHANT HEATING CO.

103 Jahant Bldg.

Akron, Ohio

The Home Furnace Service to Builders

Why not go into business for yourself? We have a good money making proposition to offer for a hustling furnace man, carpenter or builder. Will give exclusive agency to the right man, with our cooperation.

The Home Hot Blast is a handsome furnace built on the correct principles of combustion and the carpenter or builder will find the selling and installing of them worth part or all of his time.

Below are some of the features that make the Home Hot Blast a distinctive and desirable furnace.

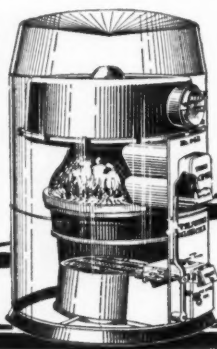
The Home Hot Blast Patented Combustion Chamber, which does away with the smoke, soot or clinker nuisance and effects a saving of 15 to 30% on fuel bills.

The Home Automatic Humidifier, a novel and effective method of retaining the proper relative humidity, so essential to health.

Also the improved shaker equipment, easy to operate and which in connection with the special dust flue, eliminates the dust nuisance. The shaker handle on this apparatus is fixed and is always there.

Be sure to write for complete information on our proposition and full description of the Home Hot Blast Furnace.

HOME FURNACE COMPANY
Holland, Mich.



columns, girders and purlins and the concrete blocks was mixed in "The Standard" Low Charging Mixer, the portability of which enabled it to be moved around the structure and thus mix the concrete very close to where it was needed in the forms.

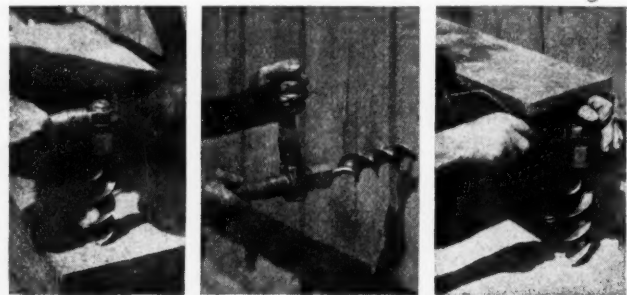
The concrete blocks for the exterior walls have a uniform size face of 6 inches by 24 inches, and are 4, 8 and 12 inches in width, according to the structural requirements. All blocks were cast in a Kramer Automatic Tamping Machine. The surface of the block for about one inch in depth is composed of one part of cement to three parts of limestone screenings. This is thoroughly mixed with only enough water so that it will adhere when pressed in the hand and is tamped hard in the lower part of the form producing the block face. The back of the block is composed of a 1:2:2 mix, in which the coarse aggregate is washed pebbles, the specifications for which require that all pass a 1-inch ring and be carried on a $\frac{1}{4}$ -inch ring. By using this rich mix, mixing the concrete for the back of the block comparatively wet and tamping it hard into the mold, a block of great density is produced.

The unique feature of this method of block construction is that a surface texture is obtained which compares in artistic effect with the rough surface monolithic concrete construction which has been greatly admired in the structures erected by the South Park Commissioners of Chicago. The great density of these blocks also makes them least affected by moisture.



Handy Ratchet Augur Handle

One of the operations which frequently endanger the good disposition of the carpenter or builder is boring holes in out-of-the-way places. There are many places where the ordinary



Showing Some of the Different Positions in Which the Miller's Falls Ratchet Augur Handle May Be Used.

brace is out of the question. Often the ratchet augur handle solves the problem in cases of this kind.

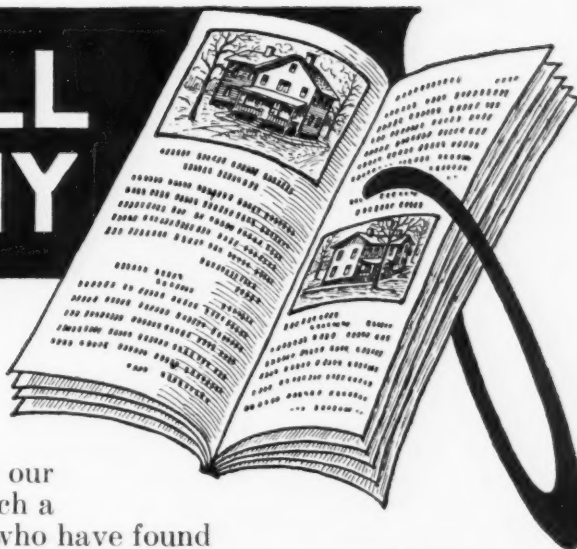
The accompanying three views show three ways of using Pratt's ratchet augur handle, marketed by the Millers Falls Company of Millers Falls, Mass. The wooden parts of this augur handle are made of ash and metal parts are nickelled. The chuck jaws admit almost all sizes of bit stock and augur shanks. It may be used as a ratchet drill. As is shown in the illustrations, there is one fixed handle and one detachable handle. The detachable handle may be placed at right angles to the fixed one, as in the two views on the right. The wood revolves on the detachable handle when it is used at right angles to the fixed one.

The ratchet works either to the right or to the left or it may be locked so that the tool may be used without the ratchet. The length of the handle is 15 inches.

This tool is one of a very complete assortment of high-grade tools marketed by the Millers Falls Company. The company has a complete catalog which is very interesting. Readers of the AMERICAN BUILDER who have an increase in tool equipment in mind will do well to look over the Millers Falls line before deciding upon their purchase.

A BOOK FULL OF TESTIMONY

of the really remarkable results dealers are obtaining with the Caloric Pipeless Furnace might easily be compiled from the hundreds of enthusiastic letters our dealers write us. We have compiled such a book of testimonials from house owners who have found in this furnace a perfect heating plant, and it contains over a thousand strong letters to prove that the

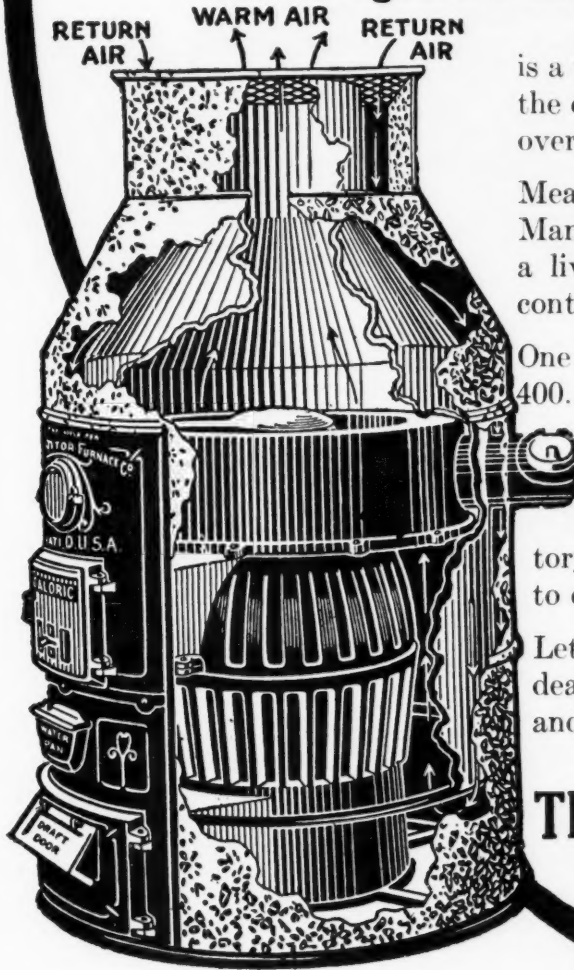


PIPELESS CALORIC FURNACE

TRADE MARK

TRADE MARK

The Original Patented Pipeless Furnace



is a wonderful success. It's new to most people, but the evidence of the satisfaction it gives is absolutely overwhelming.

Meantime our active dealers are reaping a harvest. Many of them are selling hundreds each season. It's a live money-making proposition for any dealer or contractor who will work at it.

One dealer in Pennsylvania sold 500 last year; another 400. Neither of these men had had any experience with furnaces before.

These results are possible in many places. A tremendous advertising campaign, exclusive territory and a wonderful line of dealer helps enable you to cash in as soon as you are in earnest yourself.

Let us convince you of this golden opportunity if you deal in unoccupied territory. Write for particulars and dealer proposition.

The Monitor Stove & Range Co.

100 Gest St.

Cincinnati, Ohio

98 Years of Continuous Business

Universal Floor Scraper

The floor scraper made by the Universal Floor Scraper Company, 166 Union St., Worcester, Mass., was designed to imitate as closely as possible, the action of the hand scraper. There are two tempered steel arms, one on each side of the machine, which press down on the blade as the operator lifts up on the handle. The greater the upward pressure on the handle, the greater the pressure of blade upon floor. The spring steel arms of the machine have an elastic action on the blade similar to that of the workman's arms upon the hand scraper blade.

The arms keep the machine from jumping. The pressure of the blade upon the floor may be varied from 1 to about 75 pounds without lifting the wheels from the floor. When the blade is firmly pressed against the floor and there is sufficient weight on the wheels, the machine will cut evenly and steadily, but as soon as the wheels are raised from the

floor, the entire weight rests upon the blade, which will dig into the soft spots and make a wavy floor.

The Universal floor scraper has an adjustable blade holder which is a valuable feature of the machine. With the blade in a fairly vertical position a heavy shaving can be taken, while the more the blade is flattened out the finer the shaving will be. This adjustment is particularly necessary on quartered oak floors. It prevents the blade from digging in between the hard spots. The machine is also fitted with rubber bumpers which permit the work being carried close up to the baseboard without fear of scratching.

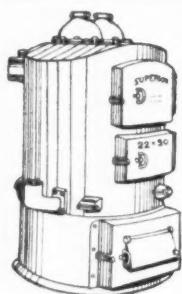
These machines are sent out by the Universal Floor Scraper Company on approval. Anyone interested may obtain full information regarding this machine from the company at the address mentioned.



Concrete Fireproof Sales Convention

The third annual sales convention for fireproof products of the General Fireproofing Company, Youngstown, Ohio, was held February 9 and 10. It was strictly an agents' convention, attended by approximately two hundred agents and salesmen representing territory all over the United States, and the problems informally discussed were those of the agents. The principal object of the convention was to determine how the General Fireproofing Company's service could be best extended to the architect, builder, contractor, engineer and ultimate consumer.

The event was crowned by the annual banquet held at the Youngstown Country Club, for which entertainment was arranged after the fashion of that of the Gridiron Club of Washington. That the object of the convention was attained and that the agents, dealers and salesmen are better fitted than ever to render monumental aid to the Building Field seems assured.



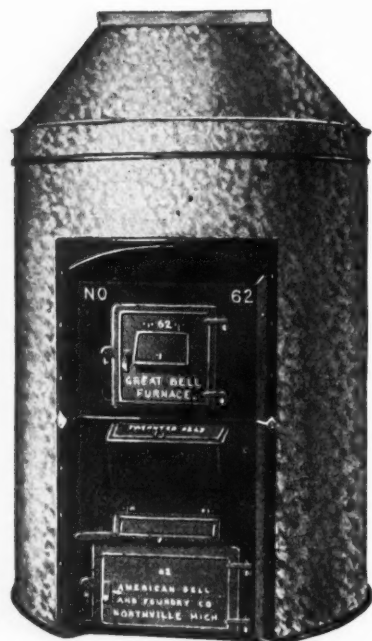
The Superior Heating Boiler for Hot Water Vapor or Steam

The Modern Method of heating your residence. Insures comfort in every corner of the house in the coldest zero weather. It Will Pay You to investigate this Boiler before buying.

Our Estimates and Plans are Free

"A Complete Line of Plumbing and Heating Material"

DUPLEX MANUFACTURING CO.
Send for Free Catalog SUPERIOR, WISCONSIN



The Great Bell -original-Pipeless-Furnace

Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. \$38.00 to \$94.00.

Made for the building where a furnace is needed, but where the cost has been prohibited.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort and the lowest relative cost. While **Cost** is secondary to **Service** in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence. Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces.

American Bell & Foundry Co.

27 Cody Street, Northville, Mich.

"That One Pipe Heats the Whole House!"

One pipe, one register, one heater—and every room in the house is flooded with warm, fresh air, day and night, all winter. A vast improvement over the use of stoves, even in matter of costs. Makes a splendid heating system for old houses as well as new—homes, stores, bungalows, etc.

INTERNATIONAL ONEPIPE HEATER

has proved its case even beyond the expectations of engineers. Its triple, asbestos lined inner casing keeps all the heat in, so that the cellar remains cool.

A Profit for Contractors

Because the Onepipe is so easy to install—no cutting walls, no serious risk of making mistakes—contractors can sell as well as specify it. Every stove user around you is an immediate prospect for an International Onepipe. Get this business and profit yourself.

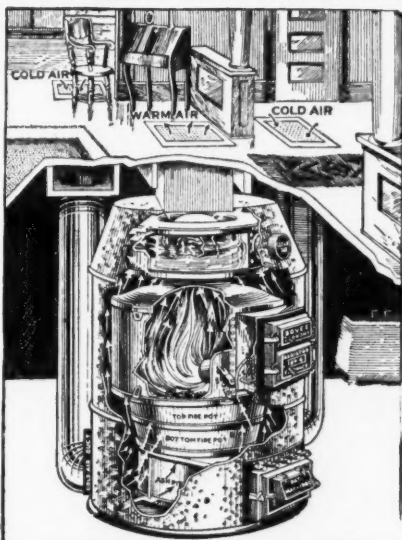


The International Onepipe is Advertised Nationally in Rural Publications, is sold on 60-Day Trial and is **Guaranteed**. Write at once for Booklet and Agency Offer, to

INTERNATIONAL HEATER CO. - Washington St., Utica, N.Y.

Mfrs. International Onepipe Heaters, steam and hot water boilers, warm air furnaces, water supply boilers, etc.

BOVEE'S PIPELESS CENTRAL



HEATING SYSTEM AND OTHER FURNACES

Every home can now have a first-class high-grade heating system in an old house as well as new. Heats as much as three large stoves. Costs but little more than a good stove.

We furnish either our UPRIGHT FURNACE for burning hard coal, soft coal or wood; or our HORIZONTAL FURNACE with large doors 16x16 inches for burning 4-foot wood or soft coal.

Either style furnace furnished in any size necessary to heat the house.

UNUSUAL SYSTEM WITH PIPING TO EACH ROOM FURNISHED WHEN DESIRED. Write for our three color catalogue, free.

BOVEE FURNACE WORKS

210 Eighth St.

Waterloo, Iowa

The MODERN WAY

Heats Ventilates and Satisfies

A Real Pipeless Furnace

Has no pipes. (See cut.) Thousands in use giving entire satisfaction. Note our heavy castings. Triple casings. Oxidized Copper registers.

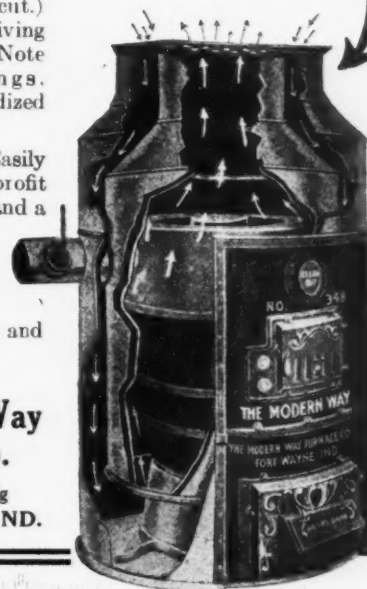
Easily installed. Easily sold with a good profit to the contractor, and a joy to the user.

Fully guaranteed. Exclusive territory.

Write for catalog and prices today.

The Modern Way Furnace Co.

Offices, Shoaff Bldg
FORT WAYNE, IND.





No Money in Repairs Like This

When a customer of yours has an accident like this it means unprofitable work for you from the standpoint of all around dissatisfaction. You can get away from the chance of any such calamity if you plaster on a base of



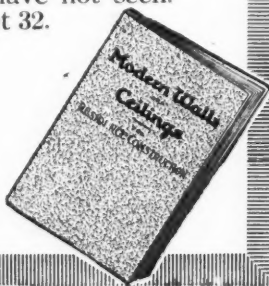
For interior walls and ceilings and as a foundation for stucco construction and over-coating work, you can't go wrong if you use "Kno-Burn."

The mesh keys the plaster to the wall, and the fabric expands and contracts with the plaster—no chance for an imperfect bond that causes cracks.

Send for "Modern Walls and Ceilings"—a new book that you have not seen. It's free. Ask for booklet 32.

**North Western
Expanded
Metal Company**

Manufacturers All Types of
Expanded Metal
903 Old Colony Bldg., Chicago, Ill.



Liquid Wax—A Household Necessity

Every housewife is acquainted with Johnson's Prepared Wax, a preparation for cleaning and polishing furniture. This wax is now prepared in liquid form, thereby making it more easy to use.

For cleaning and polishing pianos, furniture and wood-work of all kinds it is very effective. It never becomes sticky or soft—will not gather dust or show finger prints. Even hot dishes or liquids will not leave any marks on a table that has been polished with Johnson's Prepared Wax Liquid.

One application removes that cloudy appearance from mahogany furniture and gives it a rich, glossy finish.



New Store Front Announced

The Detroit Show Case Company, 481 Fort St., W. Detroit, Mich., have just announced a new store front construction called "Desco." A close analysis of "Desco" shows a marked simplicity of construction and it is claimed to be very easy to install.

The sash is so constructed that the glass rests against creosote-dipped blocks, which are placed at intervals along the inside glass surface. No metal bears on the glass on the inside. A perfectly formed gutter amply provides for window ventilation and drainage. The creosote-dipped blocks, of course, are of long life and serve as an actual protection to the glass.

"Desco" corner and division bars are also distinctive of great simplicity. In an interview with Herbert Malott, secretary of the above company, he said: "Our twenty-eight years of experience in the manufacture of store front construction has fully convinced us of the utter necessity of simplicity, not only in design, but in installation as well. This, we feel is essential for the reason that mechanics in many small towns (also in large cities) are called upon to install store front construction and in a majority of cases those mechanics lack experience. In designing "Desco" construction we had five things in mind—and worked to them: simplicity of construction, ease of installation, permanency, safety and moderate price.

"Contractors and architects have universally accepted our sales policy as thoroly co-operative in its nature. We do not sell or install complete store fronts—confining our efforts entirely to the copper sash, corner and division bars, mouldings, etc. We sell, in every case possible, direct to the contractor.

"Desco" is the result of experience and is meeting a widespread favor."

This company has issued new "Desco" literature which will be sent gladly upon request. Just ask Detroit Show Case Company, 481 Fort St., W. Detroit, Mich., for literature.



Architect's Approval of Work Executed Under Contract

The State Supreme Court, New York, has recently decided an interesting case covering the approval of work by the architect under whose supervision it is executed, stating that the architect's view is to be considered as binding upon the builder and to be carefully followed in the construction.

The case was brought by the Di Menna Construction Company against the Anchor Post Iron Works, the work done not being satisfactory to the architect and ordered removed.

The Court says that a provision in a contract that the work should be done to the satisfaction of an architect, and that his decision should be final, is legal and enforceable, altho his decision might be questioned for fraud or bad faith, and brought to the attention of the Court under such consideration.

L. R. W. ALLISON.

Just the Thing for Emergency Jobs

PARTITIONS are needed quick—an attic or basement must be lined in a day—shelving put up over night—a store or window display background or booth completed in a few hours—a theatre remodeled or a whole house lined in a few days.

"Hurry-up" jobs like these usually pay good profits. You can "deliver" by using

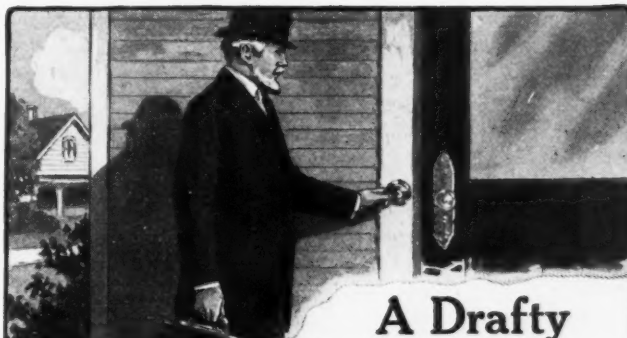


It's the only wall board with the wood core—can be worked quick and easy. It saws straight and smooth, is light in weight, but very strong and durable. It is not affected by dampness or other weather conditions—does not warp or shrink.

Be sure you get the genuine—with the wood core—sold by dealers in strips 4 feet wide by one to 18 feet long.

Write for sample and interesting booklet.

The Compo-Board Co.,
5777 Lyndale Ave. N.,
Minneapolis - Minnesota



A Drafty House Keeps the Doctor Busy

DRAFTS are dangerous—they breed colds. There is a vast distinction between *fresh air* and drafts. Ventilating is necessary but it must be *under the control of the occupant*. Architects and builders specify

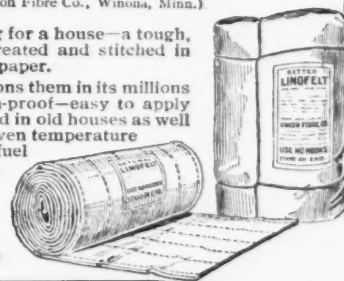
LINOFELT

"Between You and the Weather"
(Copyright 1914, Union Fibre Co., Winona, Minn.)

Knowing it to be the best lining for a house—a tough, woolly flax fibre chemically treated and stitched in between heavy sheets of Kraft paper.

It catches the drafts and imprisons them in its millions of air-cells. Odorless, vermin-proof—easy to apply between studding. May be used in old houses as well as new. Keeps a home at an even temperature the year around. Saves 30% in fuel bills and 100% in doctor bills. An ounce of prevention—

Union Fibre Co.
118 Union St., Winona, Minn.
Write Us for Linofelt Booklet



Each BLACK ROCK job sells another

THE man who is in the building business is up against a stiff problem. By short-sighted methods, he can build his business fast—at first. "But what will my profits be in 1920?"



Yes - Hes a good builder, he used **BLACK ROCK WALLBOARD** on this room - better have him do yours

That is the vital question that confronts the foresighted builder of today. "Bigger than ever" will be the answer if he uses quality materials.

Black Rock Wallboard is a real board—of four plies, built up by a scientific veneer process—with center of two black plies, treated to repel moisture.

The surface-sizing on front and back reduces painting cost to a minimum and makes a priming coat unnecessary.

When a builder uses that kind of wallboard, he can be sure that the job he does today will bring him more and more customers in the years to come. To find out how this Black Rock Wallboard looks and feels, send for a sample.



Black Rock Wallboard Co.
1510 Ontario Place, Black Rock, N. Y.

Mail
This Coupon
Today

Black Rock Wallboard Co., 1510 Ontario Pl., Black Rock, N. Y.
Please send me regular sample of Black Rock Wallboard and booklet showing Black Rock jobs.

Signed _____ (your name)

_____ (your address)

New Pipeless Furnace Development

The Hess Warming & Ventilating Company, of Chicago, has brought out an improvement in the pipeless furnace which will appeal to contractors who have noted the limitation of this method of heating, when it comes to warming a room shut off from the main room where the pipeless register is placed. Very many bungalows are provided with a bath room, kitchen or bed room not opening into the main living rooms, and with the pipeless method, as it is generally applied, such detached rooms are not heated.

The velocity of the hot air passing thru the main register is such that it is useless to attach a separate small pipe to the hood of the ordinary furnace, for the purpose of heating a separate room, for this results in a reversal of the air thru the small pipe and the air is drawn out of the room intended to be heated, instead of a supply of hot air being delivered.

The Hess method provides a separate heating chamber in

the furnace, disconnected from the main heating chamber which supplies the large hot-air register, and from this separate heating chamber warm air for the detached room is drawn. A damper is placed between the two heating chambers so that if heat is not required in the separate room all of the heat may be delivered thru the main register. The device is simple and entirely successful and as it is quite novel, application has been made for letters of patent.



Captain Elton A. Smith

Captain Elton A. Smith, the "Smith of Smithville" and president of the H. B. Smith Machine Company, of Smithville, New Jersey, is now deceased. He was born at Woodstock, Vt., sixty-nine years ago. After finding employment in his father's factory at Smithville, not to his liking, he shipped from Philadelphia as a sailor on a coasting vessel. He soon advanced to the rank of Captain.

Eventually he went into business at Savannah, Ga., amassed a fortune and had retired from active business before the death of his father, H. B. Smith, soon after which he accepted the presidency of the H. B. Smith Machine Company.

The management of the company will be succeeded by his two sons, Elton Allen Smith, as president, and Erle J. Smith as general manager. They will be assisted by the other officials of the company who occupy positions as heretofore.

(Continued to page 188.)

SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate*

SATISFACTION GUARANTEED in QUALITY and PRICE

Ask for Delivered Prices

J. K. HOWER Station **Danielsville, Pa.**

R. J. KICHLINE, Sales Agent



Best Roof Under the Sun

Montross Metal Shingles for House or Barn or buildings that require durable, economical roofs. Easily applied. Fire, lightning and storm proof. Nine different designs. Write for illustrated catalog and testimonials from satisfied customers who have used Montross Roofing for a "Quarter Century." Liberal commission to good, live agents.

Montross Metal Roofing Co., 110 Erie St., Camden, N. J.

There's an Air of Distinction

About a Good Slate Roof. However There's a Difference in Slates

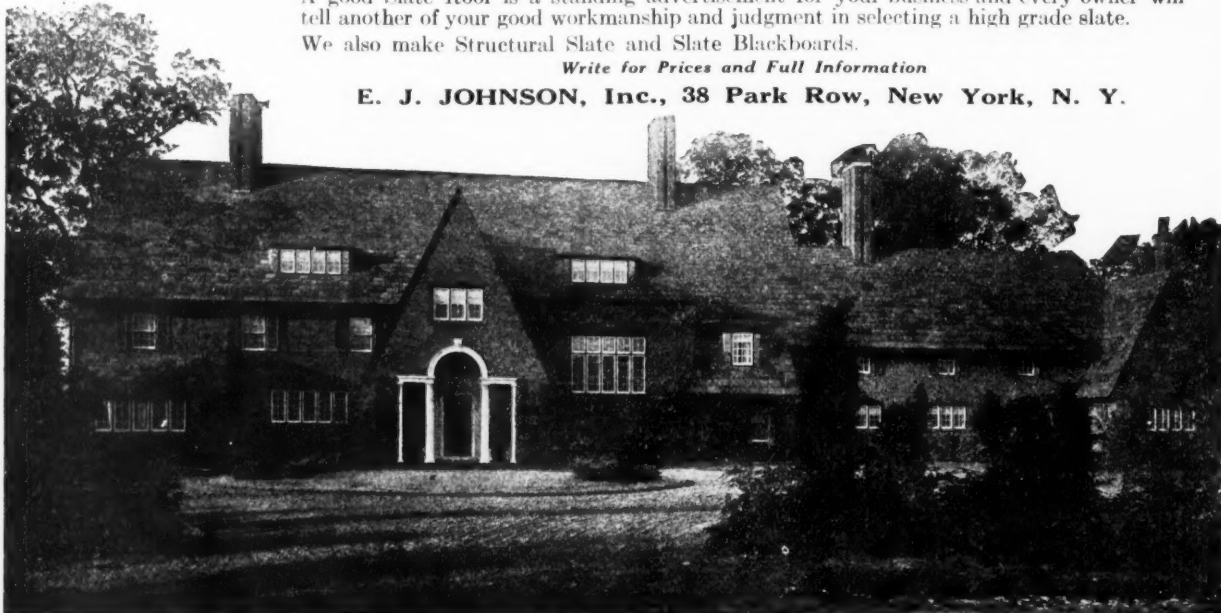
We mine only the best grades of Pennsylvania and Vermont Slate and our superior quality and variety of shades of Black, Unfading Green, Clear Purple, Mottled Purple and Green and Red will give your customers a large line to select from.

A good Slate Roof is a standing advertisement for your business and every owner will tell another of your good workmanship and judgment in selecting a high grade slate.

We also make Structural Slate and Slate Blackboards.

Write for Prices and Full Information

E. J. JOHNSON, Inc., 38 Park Row, New York, N. Y.



RESIDENCE: JOHN T. GILLESPIE, MORRISTOWN, N. J.


DESIGNED BY H. T. LINDBERG

ALBRO & LINDBERG, ARCHITECTS

**UNFADING
ROOFING SLATE**
and Slate Blackboards

*Best to be had and made in
Slatington — Buy from us*

Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.



ROOFING SLATE

—“they
were represented
to be as good as G F T
slate but after we used them
we know POSITIVELY that they
were NOT AS REPRESENTED. Hereaf-
ter we will use G F T slate. We are
done with ‘Just as Good’ brands.”
This is the experience of all who buy
UNKNOWN brands of roofing. Insist
on G F T slate. They are the best and
cheapest in the end. Price List
and Catalogue on request.
Sole Manufacturers
Slatington Slate Co.
Slatington, Pa.



The Roof of Eternal Youth
SHELDON'S
RED, GREEN, PURPLE, BLACK
SLATES

Custom made to “fit” *your* Roof. A wide
choice of distinctive Color Combinations.
Quality, Price and Service unequalled.

F. C. Sheldon Slate Co., Granville, New York

Genuine Bangor Roofing Slate


Use Genuine Bangor Slate for your own work. Recom-
mend it to your customers:

- (a) For durability—Slate roofs 50 years old are common.
- (b) For safety—Slate is a perfect fire protection.
- (c) For economy—First cost is not high; yearly cost is the lowest of all roofings.
- (d) For appearance—Always dignified and attractive.

Do you know the flat slate roof? See it at the Building
Exposition, Grand Central Palace, New York, March 5 to
11, 1917.

NORTH BANGOR SLATE COMPANY
BANGOR, PA.

What Solves the Roof Problem
Best for Cost, Utility, Beauty—



Asphalt Shingles
Red and Green

STOWELL MFG. CO., Asphalt Prepared Roofings
42 Culver Ave., Jersey City, N. J.

ROOFING SLATE SINCE 1869
Miners, Makers and Shippers of all Styles and Colors
of Roofing Slate. Write for Prices.

RISING & NELSON SLATE CO.
Main Office: West Pawlet, Vt.
Branch Offices:
1058 Marbridge Bldg., New York City. 4 Post Office Sq., Boston, Mass.
Office and Yard, 2654 W. Harrison St., Chicago, Ill.

You Can Lay
HUDSON STRIP SHINGLES
in less than half the time
that it takes to apply any other shingles

Send for Particulars to
Asphalt Ready Roofing Co.
Dept. 53 9 Church St. New York, N. Y.



GRANITE FACE YOUR CEMENT BLOCKS

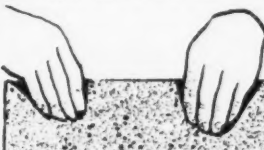
WITH the Gibler Sheet Facing Process you can put new
life and greater profits into your cement block busi-
ness. Cost of production but slightly more.

The Gibler Process of Granite Facing is simple but effective—
a patented process. The Gibler Facing Machine makes it
easy—insures success—pays back its cost first month in
crushed granite saved. Machine is strong, well built—will
last a lifetime.

Right to use this wonderful glue-paper-granite facing method
goes with every machine. Full working directions furnished.

As a special introductory offer we will
ship this \$18.00 machine to you for
only \$15.00. Terms \$5.00 down—
balance C. O. D. 10 days. This gives
you a ten-day trial. Money returned
if not fully satisfied.

Send your order today to
B. F. GIBLER
MAUSTON, WISCONSIN



**SPECIAL
30 DAY PRICE
\$15.00**



Captain Smith graduated from a Sea Captain to a Captain of Industries and will be greatly missed in the community and State of his adoption.

✦ Thatched Effect Shingle Roofs

The effect which the roof of a house has upon its appearance is well known. The roof offers the architect one of the most effective vehicles for the expression of his art in exterior house design. The artistic effect of the roof is dependent not only upon the general shape, but also upon the materials used in the construction. For instance, the beautiful roofs of English cottages owe much of their charm to the materials, one of the most widely used being thatch.

Thatch is not favored in this country as it is there, but the effect which its use produces is very desirable. The Stand-

ard Stained Shingle Company of North Tonawanda, N. Y., originators and manufacturers of "Creo-Dipt" stained shingles, have devised a successful method of laying these shingles, which produces the texture and softness of thatch. A house having the roof treated in accordance with their plan is shown in the illustration.

The thatched effect is obtained by having no sharp angles, by rounding the hips, ridges, gable ends and eaves and furring the valleys and by using "Creo-Dipt" stained shingles on rounded surfaces bent with or against the grain as the architecture may require. The butts of all shingles are sawed in their thatch pattern, except those to be used on the first course at the eaves, and laid out of the horizontal in long, irregular waves, varying in width of exposed surface from one to five inches.

Instructions as to how the "Creo-Dipt" stained shingles are laid to give the thatched effect, together with details showing method of construction of the roof and giving other valuable information, as well as photographs of houses on which these shingles were used to produce the thatched effect, will be furnished by the company on request.

The Standard Stained Shingle Company maintains a service department to co-
(Continued to page 190.)



Home of Edwin C. May, Squirrel Hill, Pittsburgh, Pa., Showing Thatched "Creo-Dipt" Stained Shingle Roof. M. Niedlinger, Architect.

Our Free Plans Will Help You—

Meadows
TRADE MARK REGISTERED

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing Meadows Inside Stationary Cup Elevators.

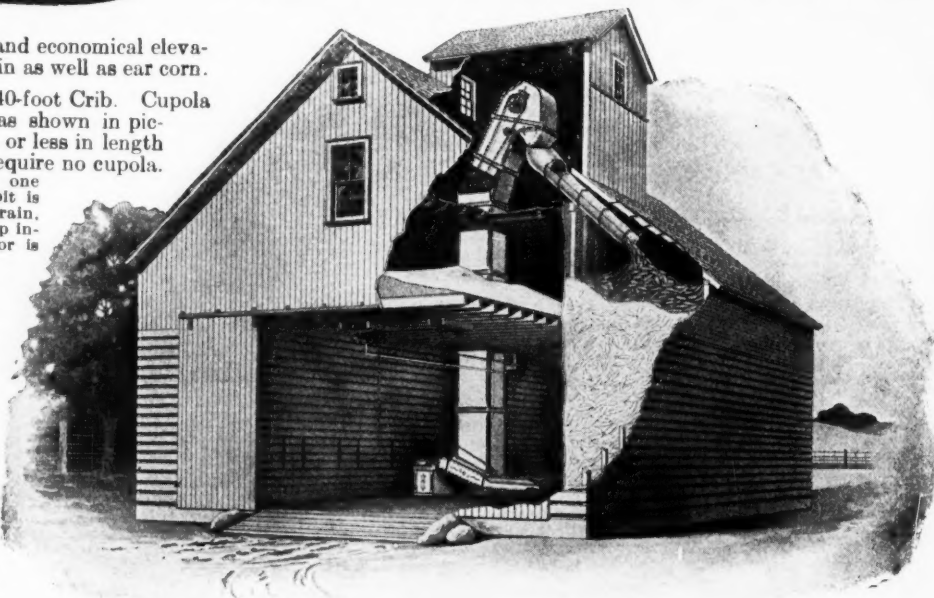
The most convenient and economical elevators, carrying small grain as well as ear corn.

The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; and cribs 36 feet or less in length with half-pitch roofs require no cupola.

Elevator is confined to one side of driveway. No pit is necessary for dumping grain, just a hole 16 inches deep in to which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joists.

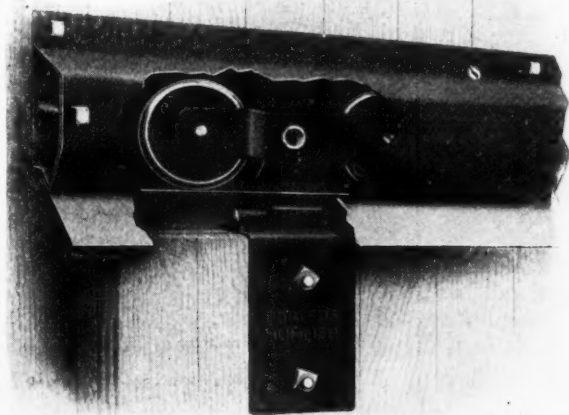
But write in today for our free Crib and Granary plans, catalogs and large posters telling all about our outfits and their application. Valuable information for the builder, and writing for it obligates you in no way.

**Meadows
Mfg. Co.**
Pontiac, Illinois



"HUMMER" DOOR TRACK and HANGERS

POPULAR because PRACTICAL



Track and cover—a single piece of heavy steel. Thoroughly bird and storm proof.

Hangers are roller bearing; they cannot jump the track. Lag screws, end brackets, etc.—furnished complete.

If Your Local Dealer Can't Supply You, Write Us

J. E. PORTER CO.
6202 Fremont St. - Ottawa, Ill.

MYERS GARAGE DOOR HANGER

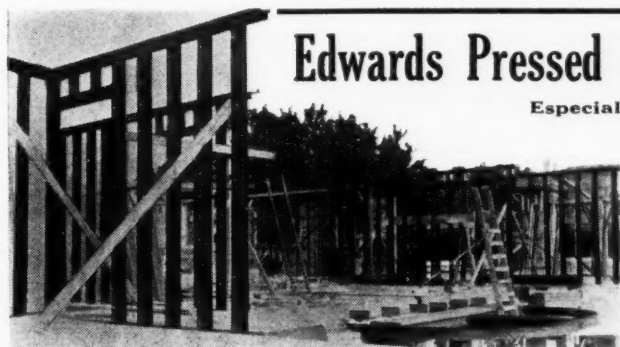
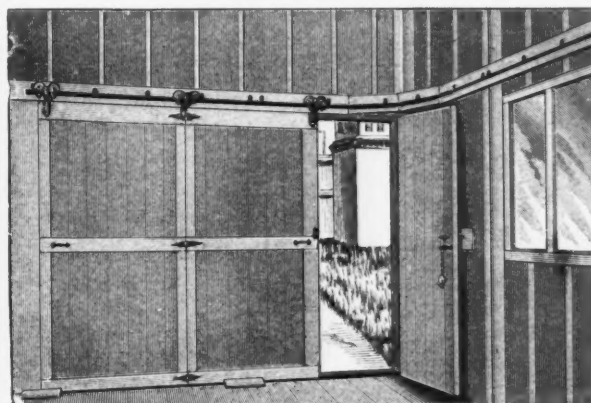
Why build garages with swinging doors which are a continual annoyance and a waste of space? The Myers Garage Door Hanger with Track and Fixtures is installed on the inside of the building fully protected from the weather. The door is hinged in sections and the track bent so that the door slides easily around the corner and occupies a minimum space. A small foot door at the side obviates the necessity of opening the entire set of doors when not required.

Equipped with the Myers you have uniform door service from season to season throughout all kinds of weather. No shoveling of snow or chopping away of ice every stormy day as with swinging doors.

RIGHT NOW, write for our complete descriptive circular.

F. E. MYERS & BRO.

Ashland Pump & Hay Tool Works ASHLAND, OHIO



Edwards Pressed Steel Lumber

Especially Adapted for

Floors, Walls
and Roofs

also for

Metal Lath
and
Plaster - Board
Partitions

**SPECIAL
GARAGE
OFFER**

We will ship the walls for 12x18x8 garage, complete in five sections composed of steel studs covered both sides with metal lath, ready for stucco for

\$555 Freight
Prepaid



CONCRETE TANKS

Built in One Day

Lock-Form steel reinforcement and form in one—easiest, quickest and cheapest way to build concrete watering tanks that won't crack rust or rot—costs less than any other tank. All sizes.

CONCRETE SILOS, GARAGES, GRAIN BINS built with Trusridge steel reinforcement and form, save time, labor, cost of special forms and make a stronger structure. Easy to build. Cheaper than wood or steel. **Men Wanted** to act as agents. Big Money made by contractors, plasterers, etc.

FREE Write for book that tells how to build at big saving better concrete Tanks, Silos, Garages, Grain Bins.

EDWARDS METAL LUMBER CO.

4022 Mill Street

Kansas City, Mo.

Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning.

His confidence in your judgment will make it easy for you to secure this additional work.

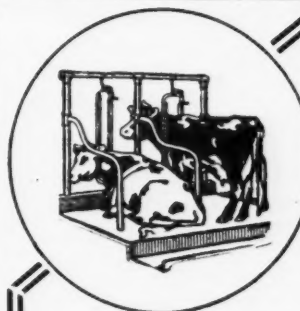
The Barnett System of Guaranteed Lightning Protection is the easy way to more profits on the same job. Our rods are in big demand and there is a big profit in selling them. They are made of pure copper cable, with attractive fixtures that are easily put on any building.



Why not equip yourself to take advantage of the opportunities for this work which are continuously arising? Let us show you the way to more profits on the same job.

FREE -- Cable Samples, Price List and Catalog. Write for them today.

JOS. L. A. BARNETT & CO.
RIVERSIDE, IOWA



--Use Better Barn Equipment--

and Barns you build will Show More Profit.

Buckeye Stalls, Stanchions and Litter Carriers, will make your barns more profitable. Cows will give more and better milk when stabled in comfortable quarters.

Our equipment is simple and accurate in construction, easily assembled and gives comfort to the cow.

Different from all others. New Interlocking Connections.

Write today for our catalogs

MAST, FOOS & COMPANY
Box 110 :: SPRINGFIELD, OHIO

MERCHANT'S OLD METHOD



ROOFING TIN

has been the accepted standard quality roofing plate for the last quarter of a century.

DURABLE LASTING FIRE RESISTING

Not only does it protect from fire in adjoining building but it prevents the spread of interior flames upward through the roof.

Open Hearth copper bearing base. Very heavy coating. Palm Oil Process.

Send for Booklet and Prices to Dept. B33.

Fire Retarding "Star" Ventilators

Evans "Almel" Fire Doors.

MERCHANT & EVANS CO.,
Philadelphia Pa.

New York
Baltimore
Atlanta
Cleveland



Wheeling
Chicago
St. Louis
Kansas City

Why Guess?

and make wrong cuts, when it is possible for you to be exactly right in figuring and cutting common rafters, hip or valley, jack or cripple rafters, projecting braces, bevels, stairs, towers, columns, circular tanks, silos, etc., with the

A B C Protractor Square

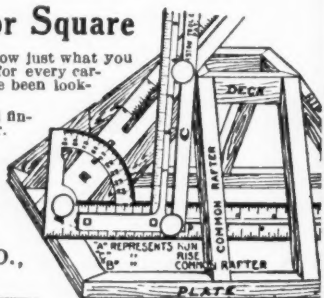
Prevents mistakes because you know just what you are doing. It's a real necessity for every carpenter and is just what you have been looking for.

Made of steel, graduated and well finished. Nothing to get out of order.

The saving in time and lumber will pay for it in one day. You can go about your work with certainty.

Price \$2.00, postage paid
Ask the Hardware Dealer in your town.

STAMPING & TOOL CO.,
La Crosse, Wisconsin.



IVES PATENT WINDOW STOP ADJUSTER

Prevents Drafts, Dust and Window Rattling



The only stop adjuster made from one piece of metal with solid rib and heavy bed that will not cup or turn in tightening the screw

Descriptive circular mailed on application

THE H. B. IVES CO.

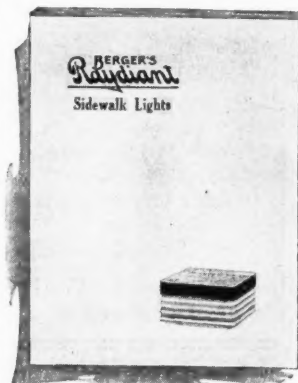
Manufacturers of Builders' Hardware
NEW HAVEN CONN. U. S. A.

operate with architects, contractors and builders. They go over plans carefully, criticising them if requested and offer suggestions giving approximate quantities of "Creo-Dipt" stained shingles required and other information which is of assistance in obtaining the best results. Correspondence to the company should be addressed to 1028 Oliver St., N. Tonawanda, N. Y.

Berger's "Raydiant" Sidewalk Bulletin

The Bulletin No. 13 of The Berger Manufacturing Company of Canton, Ohio, covers the subject of Berger's "Raydiant" System of vault, floor and sidewalk lights in a thorough and easily comprehended manner. The subject is an important one since the advantages of having the space under the sidewalks flooded with daylight are apparent. Not the least of these is the great saving in artificial lighting bills.

The Berger "Raydiant" System is scientifically designed to furnish the most effective means of transmitting daylight into artificially lighted spaces together with structural features aiming at ease, speed and economy of installation, abundance of light area, strength and durability. The glass are designed to scientifically diffuse or refract the light rays to various distances, several different styles of glass being used to produce different results. The construction consists of a series of permanent unit interlocking forms or base plates of heavy galvanized steel. These forms are regularly punched with openings and the glass are fitted directly into and over these openings. Rods, forms and glass are thoroughly and permanently tied together by the application of concrete.



Cover Design of Berger's "Raydiant" Sidewalk Light Book.

The concrete process of installation is carefully explained in Bulletin No. 13.

Tables showing safe loads for "Raydiant" Sidewalk Lights are given from which the proper depth of form for given load and span may be determined. In addition to the material dealing directly with sidewalk lights, the Bulletin also describes Berger illuminated and non-illuminated doors, coal hole frames and doors and coal hole rings and covers.

This bulletin should be in the office of everyone interested in the installation and specification of vault, floor and sidewalk lights.

Pullman Unit Sash Balances

The sash balance shown in the illustration (page 192), is a product of the Pullman Manufacturing Company of Rochester, New York. The balance is very simple in construction, consisting of only four parts—a housing of pressed steel, a revolving drum, a coil spring of high grade clock spring steel and a tape of rustproof steel which connects to the sash.

The operation of this sash balance is practically noiseless. The length of the coil spring is such that the sash is balanced perfectly thruout its entire movement. The balance is constructed in such a manner that long life is assured. It is covered by a ten year guarantee which calls for replacement of any Pullman Unit Sash Balance which proves defective during that period after purchase. The box frame is eliminated by its use, a plain plank frame being substituted. There are several other advantages claimed for this type of balance,

(Continued to page 192.)

DAMP-PROOFING PERCOPROOF COMPOUND

Makes Foundations
Impervious to Moisture

Eight Thousand Gallons of Percoproof were used for waterproofing the Cincinnati General Hospital Buildings ::

APPLIED with a brush direct to foundation walls, concrete construction, masonry, or stucco surfaces, Percoproof forms an unbroken, elastic facing that fills every pore and crack and prevents all seepage and moisture from penetrating. Unlike ordinary waterproofing materials, Percoproof contains no oil and requires no thinning. It comes ready for use and is equally satisfactory in all climates and at all seasons. Write for our damp-proofing booklet.

THE PHILIP CAREY COMPANY
136 Wayne Ave., Lockland Cincinnati, Ohio



**BANKRUPT
PRICE
\$47.50**

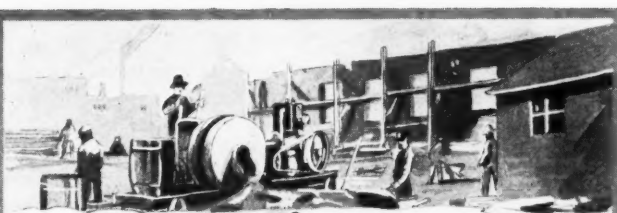
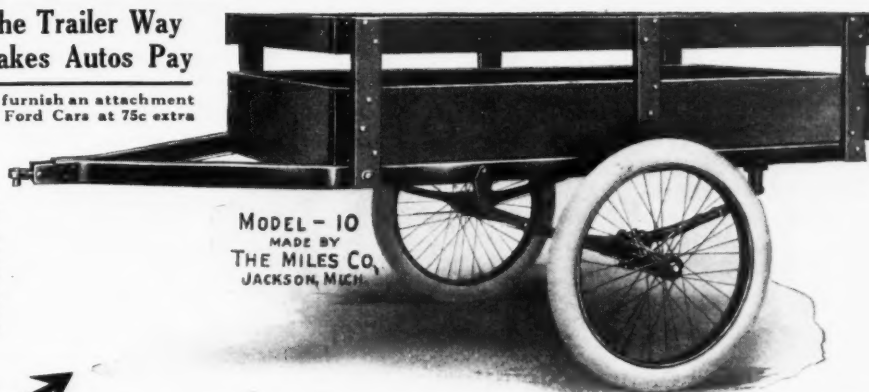
**The Trailer Way
Makes Autos Pay**

We furnish an attachment
for Ford Cars at 75c extra

F. O. B. Jackson, Mich.

OUR MODEL 10 Auto Trailer, with 2" solid rubber tires, steel wheels, ball-bearing axle, automobile channel frame, heavy springs, and shackles, drop forge spring links, our famous all-way coupling, combination rack and delivery body 42"x70"x15" deep. Finished in a handsome brewster green. Can you beat it? No. And neither could we if we had not bought the material from a large Automobile Company—at bankrupt prices!

THE MILES COMPANY
309 E. Franklin St. Jackson, Mich.



ON THE JOB ALL THE TIME

THE "New Way" ENGINE

"GOES AND GOES RIGHT"

It is the little delays that eat up the sum total of profits, such as when your engine is crippled or "stalls" on the job. If you think it pays to fool and fuss with an unreliable engine, just figure up how much you could make, and how much closer you could bid with a guaranteed "NEW WAY" Engine, that will pay unequalled dividends in service and satisfaction.

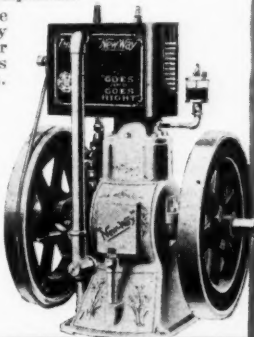
"NEW WAY" Engines are furnished with gear-driven high tension magnetos and other high class equipment.

The strong and compact design of the "NEW WAY" Engine fit it splendidly to meet the demands of the contractor for a separate power unit or as a part of his mixer, hoist, pump or other equipment.

If you are interested in getting the utmost in engine-value for your money, let us send you our new Catalogue No. 35. It is full of straight-to-the-point information.

Built in all sizes and types from 1 to 12 H. P.

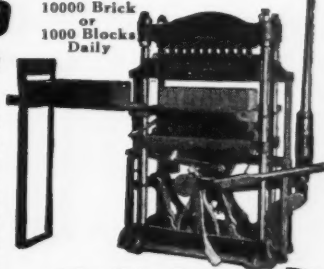
THE "New Way" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.
18 Chase St.



Make Your Own Brick

and
**\$20 to \$50
Extra Daily Profit**

10000 Brick
or
1000 Blocks
Daily



The Helm Press

Be independent of the clay brickmaker and dealer. Put yourself in a position to make more money on your contracts, to take bigger jobs—more profitable jobs without worry of delays or lost time eating into your profits. With a Helm Press you can make 10,000 Bricks or 1,000 Blocks a day—\$20 to \$50 daily profit. Operates under 80,000 pound pressure. No tamping—no burning—every brick or block perfectly true. A big demand in your own community for this superior kind of building. Equip yourself to supply it.

Helm "Dry Wall" Building System

Appeals to builders, contractors and architects. It overcomes the opposition to concrete because it offers absolutely Dry Wall construction. It saves money for builders, as no furring and lathing are required, and it makes rigid walls and fireproof walls. This is the system which is bound to get you business and give you the advantage over all other products.

Send for Two Valuable Books FREE

Let these FREE books tell you all about this great opportunity which is open to you today. It will tell you all the details of this system, about the Helm Press and the Dry Wall building system. It will show you how easy it is to start a profitable business. It tells how each product is made, how it is cured and sold. Write today. Use a post card or coupon.

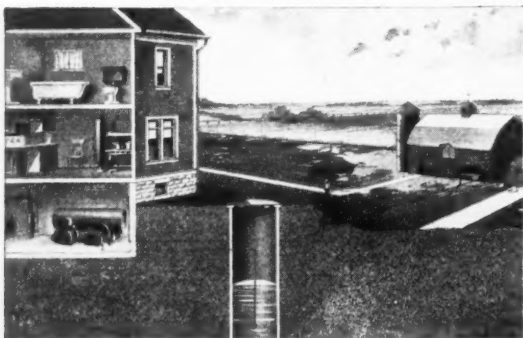
HELM BRICK MACHINE CO.
373 Mitchell St.
CADILLAC, MICH.

Helm Brick Machine Co.
373 Mitchell Street
Cadillac, Mich.

Gentlemen—Please send FREE the two books on Concrete and Helm Presses.

Name
Address

Convenience is the Chief Argument



Your customers will gladly "OK" DEMING

NO town or farm house today is complete without a steady, assured supply of running water, delivered under pressure to kitchen, bathroom and barn. When you can install a system you can guarantee your customers satisfaction by recommending any of the well known

DEMING

Hydro-Pneumatic Water Supply Systems

The best reference book for your own use and to show your customers is the DEMING CATALOG, a handbook completely describing the systems and illustrating their simplicity and wide usefulness. With "**more than 1000 types and sizes**" of hand and power pumps and water supply systems from which to choose, the DEMING line is a time-saving convenience to the busy contractor. Write today.

THE DEMING COMPANY

99 Depot Street, Salem, Ohio

Backed by 35 years' experience in pump design and construction



Fire protection is an advantage not to be overlooked
USE THE COUPON

Please send Water System Catalog to

Name _____

Address _____

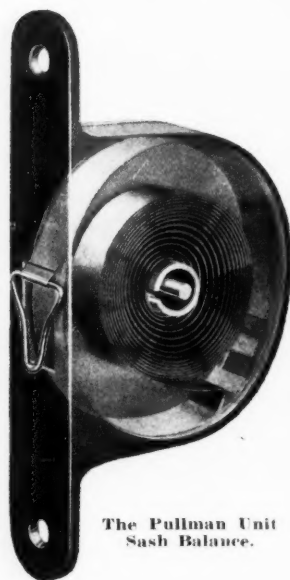
Town _____

State _____ (99)



among them being great lighting area obtained, tighter window, space saved by narrower mullions required, less inside trim to cover and easier to install.

The unit feature makes the installation of the Pullman Unit Sash Balance very simple because the face plates are all the same size in a given unit and mortises for them may be cut at the mill as for ordinary sash pulleys. The face plates are designed for the utmost convenience in cutting the mortises. The mortises for Unit K balance, for sash weighing from 4 to 32 pounds, are made by boring six 1-inch holes tangent; four of these holes are bored thru the stile, making the mortise for the body of the balance. The two end holes are counterbored to the proper depth to let the face plate in flush.



The Pullman Unit Sash Balance.

A top pattern balance is made to be fitted in the head, requiring no space at the side.

When the balances are placed in concrete buildings a metal housing is used to provide a convenient and economical means of making the recess for the balances. These balances are approved by the Underwriters' Laboratories, Inc., for use in fireproof buildings.

A catalog and other information will be furnished to anyone interested by the Pullman Manufacturing Company, Rochester, N. Y.



Text on the Usage of Cement

A book, "Alpha Cement: How to Use It," has just been issued by the Alpha Portland Cement Co., Easton, Pa. The information in the book will be found exceedingly instructive to all members of the building fraternity.

It is closely indexed so that all information in it can be readily found. The text is in no way biased with respect to Alpha Portland Cement tho much valuable information regarding this cement and the way it is manufactured is given.

In connection with the latter it is stated that Alpha Portland Cement is fully guaranteed and that during the course of manufacture samples are taken every hour and tested by chemists. This insures a high grade and uniform quality of cement.

In the first pages of the book information is given on proper methods which the builder should follow in mixing for either cement or concrete work.

Following this are a number of pages on which the building of forms for use in connection with concrete construction, are described, and then comes information on reinforcing concrete.

After many more subjects relative to the handling and properties of cement are gone into, plans of houses and other structures built of concrete, are described. The reproduction of many good blue prints of house plans and concrete forms for that particular job; and descriptions of the proper way to handle the cement and concrete on that particular job, etc., are among the things gone into here in detail.

In this review it would be impossible to speak of each of the many subjects taken up in the book. It will, however, add a world of information to the fund of knowledge which you may have along this line. Write for it today and get it by simply stating that you are a reader of the AMERICAN BUILDER.

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An absolutely sanitary, odorless indoor closet that may be placed anywhere in the house. Abolishes the germ breeding out-door vault. A comfort and a convenience when there is no sewer connection. Germs killed by chemical. Easily emptied as the ash pit of a stove.

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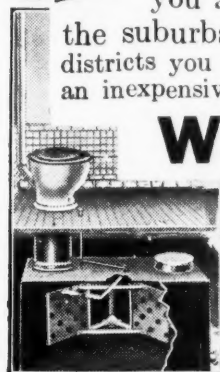
you are building in the suburbs, small towns or country districts you can quickly solve the problem of an inexpensive indoor toilet by installing the

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A. S. ALOE CO., 624 Olive Street, St. Louis, Mo.

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CONTRACTORS—who puts down the concrete sidewalks around the homes you build? Who lays that concrete floor or basement floor? Do you? If not, GET A SET OF THESE TOOLS AND DO THE WORK YOURSELF; make this extra profit that you are paying out to someone else. No expert is needed to operate these tools.

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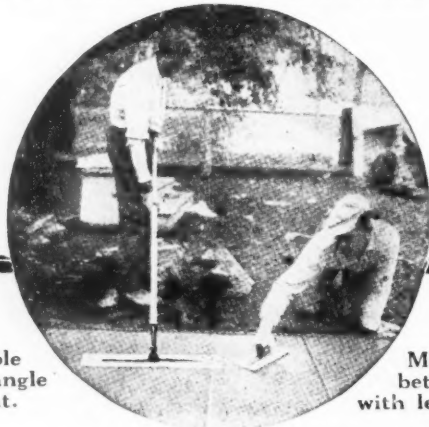
Arrowsmith tools are built on entirely new lines of the best of material and each tool is especially adapted to its work. All tools are fitted with our 6 foot adjustable handles.

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We will send a set of these tools on 10 days' free trial to responsible contractors and if the tools are not satisfactory and if they don't save you time, labor and money on every contract, return them.

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SOUTH WATER STREET, ARROWSMITH, ILL.



Adjustable
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More work,
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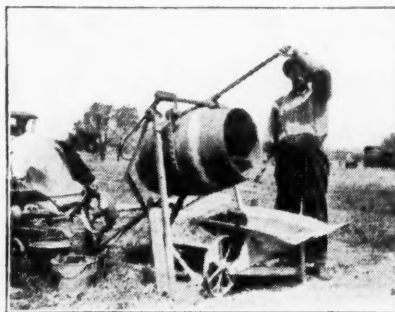
The Barrel Mixer

Mr. Averitt, of Greenwood, Ind., who bought a little Barrel mixer, made by the Barrel Mixer Co., of Madison, Wis., after using it last fall writes that with a 1½-horsepower engine, one man and a boy can lay from 600 to 800 square feet of concrete 4 inches thick in an ordinary day.

Another contractor states that during the past year he poured over four carloads of cement with the Barrel mixer

with a 6 to 1 mixture, and while he has a large 5-cubic foot mixer he uses this Barrel mixer on the majority of his work, owing to the convenience of moving it about and the fact that it has much more capacity than he anticipated.

Contractors are using the Barrel mixer in culvert and bridge work with



Discharging Contents of Barrel Mixer Into Wheelbarrow.

good results and for doing jobs on farms it can't be beat, for it is so light and easy to transport that one man only need be sent out with it.

Every building contractor finds during the course of his work a great many places where a modest sized and modest priced concrete mixer would be of big advantage to him. There are many jobs which they could land easier and handle at a bigger profit if they had a Barrel mixer. For the amount of investment required and the adaptability on so wide a range of big and little jobs, it would appear that the Barrel mixer has an earning capacity that no contractor can afford to overlook.

Three different outfits are made—for hand use, for power, using 1½-horsepower engine, and with drum hoist attachment which will raise 100 to 125 pounds, or with a 4-horsepower engine, 500 pounds.

Further facts regarding the Barrel mixer may be obtained by writing to the Barrel Mixer Co., Madison, Wis.



New Appointments in Berger Organization

The Berger Manufacturing Company, Canton, Ohio, announces the following appointments: Mr. R. W. Van Horn, who for the past six years has been connected with the New York branch in charge of the metal lumber department, has been transferred to the home office and placed at the head of the building material products division. Previous to his connection with The Berger Company Mr. Van Horn was chief inspector of materials for the W. & L. E. Railroad.

Mr. Norman Hill, recently efficiency engineer for the Du Pont Powder Company, Wilmington, Del., and formerly

(Continued to page 196.)

RIDER AGENTS WANTED

Everywhere to ride and exhibit the new **Ranger "Motorbike"** completely equipped with electric light and horn, carrier, stand, tool tank, coaster-brake, mud guards and anti-skid tires. **Choice of 44 other styles**, colors and sizes in the famous "Ranger" line of bicycles, all at **Factory-to-Rider** prices.

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TIRES—Lamps, Horns, Wheels, Sundries, and repair parts and supplies for all bicycles—at half usual prices. **SEND NO MONEY** but tell us exactly what you need. Do not buy until you get our **Factory-Direct-to-Rider** prices, terms and the big **FREE** catalog.

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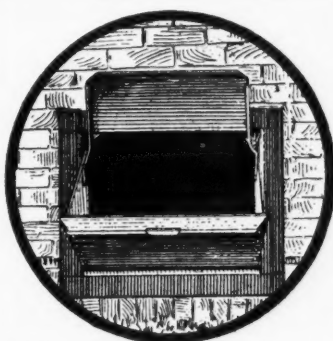
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Show your customer just exactly how his building will look when it is finished.

Many people cannot form a correct idea of the appearance of a building from the Blue Print Plans, and a well-made drawing in perspective, properly shaded and set off by a little landscape is a valuable help in landing the job.

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Sell the **Kewanee**—the steel chute that is guaranteed for five years. Thousands now in use and the demand still growing for the chute that cannot be broken. Write today for the Contractors' and Dealers' prices.

KEWANEE MFG. CO., Kewanee, Ill.



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Every new building you erect should be provided with an up-to-date, efficient coal chute such as the Canton.

Work in the Canton chute on your next contract. It is burglar-proof—durable—neat appearing—no broken windows to let in icy blasts—arrangement of hopper renders unsightly lawns a thing of the past—provided with independent outside locking device operated with special key.

Made in three sizes.

Have you our catalogue "B-4" entitled "Builder's Iron Work?" Let us mail you a copy.

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The BEST fuel chute.

Here is the coal chute you have been looking for to place in your up-to-date home. Glass or solid cast iron door. Neat and substantial, this chute sets flush with side wall and is rain and burglar-proof. All chutes are painted thruout.



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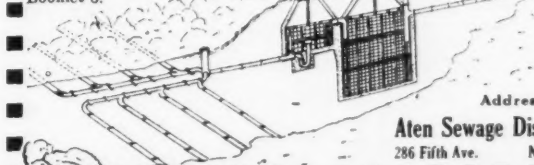
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Transports refuse and destroys it by a non-chemical, odorless process. Costs nothing to operate, "fool proof," no cleaning.

Contractors and builders can increase their prestige with owners by recommending and installing the Aten System. No skilled labor necessary. Write for Booklet 8.



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Hundreds of men are in daily attendance at this old-established college. In your own home you can do the same work these men are doing. The same experts that teach them will guide you toward the big job. They will prepare your instruction matter. Your work is examined and approved by them. These men know exactly the practical training you need, because they are in constant charge of big work. No books to sell.

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1017 Lake View Building, Chicago, Ill.

engaged in appraisal work for the Public Service Commission in Maryland, has been appointed efficiency engineer with headquarters in the home office of The Berger Manufacturing Company. Mr. Hill is a graduate of University of Pennsylvania and later completed post-graduate courses in both Pennsylvania and California.

Mr. P. V. Stonerod, formerly inspector of steel of the Carnegie Steel Company and for the past few years connected with Berger's New York branch in the capacity of construction engineer, has been placed at the head of the sidewalk light department and will be located in Canton, Ohio.

A. H. Bromley, Jr., contracting engineer, who for the last several years has looked after the interests of The Berger Manufacturing Company in the Cleveland territory, has been appointed chief engineer of sales department and hereafter will be located in the Canton office. Mr. Bromley is an associate of the American Society of Civil Engineers. Some of his former connections were, superintendent of fireproofing department of the Vulcanite Pavement Company, Philadelphia; superintendent and engineer for the Chas. L. Pitts Company, contractors, Newark; concrete engineer of the Guarantee Construction Company, New York, and estimator and engineer for the Corrugated Bar Company, New York.



Atkins Pioneers

In 1906, men who had been associated with E. C. Atkins & Co., of Indianapolis, Ind., for twenty years or more, formed an organization which they called the Atkins Pioneers. On the evening of February 10th of this year, this organization celebrated their eleventh anniversary with a banquet at the Spencer House, Indianapolis.

The original membership in 1906 was 62, which has since increased to 121. John Henry Wilde, the oldest member, who had a record of 51 years continuous service, died last

September. C. F. Aumann, the present treasurer of the association is the oldest living member, having been in the Atkins service 47 years. The object of the association is to promote sociability and a greater loyalty and zeal for the business.

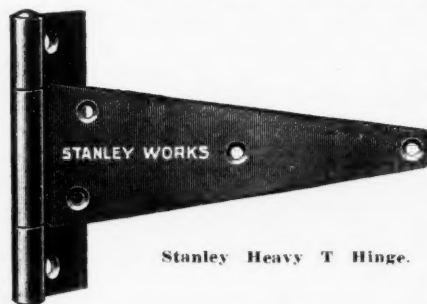
The officers during 1916 were W. O. Williams, president; C. S. Bronson, vice-president; C. A. Newport, secretary and C. F. Aumann, treasurer.



Stanley Heavy T Hinge

The Stanley Works, New Britain, Conn., manufacturers of a large line of hardware for swinging garage doors, has placed on the market a heavy T-hinge with reverse pad.

Very little time and labor is used in applying this hinge as



Stanley Heavy T Hinge.

the jamb of the door only is mortised, and the door put in place and the surface leaf applied to the surface of the door. These SC963 J1 hinges are packed with screws, one pair in a box, and also in

complete sets of hardware for the garage door.

The sets consist of hinges, bolts, latches, hasps, door holders and handles.

The reverse pad T-hinges can be furnished in 10, 12, 14 and 16-inch sizes, and are finished in dead black japanned. Further information will be furnished by The Stanley Works, New Britain, Connecticut.



Which Kitchen would a Housewife Choose?

Would she choose a kitchen with a large clumsy refrigerator taking up a lot of space—where the iceman's daily visits leave a trail of mud and water?

Or would she choose a kitchen where the refrigerator is built flush to the wall with only the face visible—where she only has to buy the ice during the summer—and where the iceman (when he is needed) fills the chest from the OUTSIDE of the house?

The answer is too obvious. And still many housewives put up with inconveniences pictured at the left simply because they have not heard of



The Herrick Outside Icing Refrigerator

The housewife as you know is a most important factor to be considered in building a new home. It will pay you well therefore to write for our catalog on the Herriek and our FREE PLANS. These plans show you just how the Herrick is designed to fit into the kitchen. And the catalog shows you how it really pays for itself in the ice it saves (by means of the outside compartment where the cold air enters and where the iceman fills the chest).

The HERRICK REFRIGERATOR CO.

WATERLOO, IOWA

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